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Removing Barriers for Seniors at Transit Stops and Stations and the Potential for Transit Ridership Growth

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EXECUTIVE SUMMARY

INTRODUCTION

The research described in this report seeks to identify barriers that may interfere with the use of public transportation by older adults, and to determine viable means for addressing these barriers. The research is timely and critical for two primary reasons. First, the population of older adults is growing dramatically and any decline in or cessation of driving does not translate into a reduced need for transportation and mobility. Older adults will continue to have mobility and transportation needs long after their ability to drive, and public transit provides one option. Second, addressing barriers older adults identify regarding public transit through social marketing has the potential to boost ridership.

While public transportation could fill a transportation gap for older drivers, there are many challenges and barriers to its use by older adults:

- lack of information about schedules and routes, perception of inconvenience; unreliable service [1]
- waiting outdoors in uncomfortable station areas [2]
- lack of security and actual and/or perceived crime[3]
- inconvenient pedestrian access to stops [4]
- lack of training for bus drivers to better understand and meet the needs of senior riders [5]

The focus of this study was on the identification of barriers to transit use and on testing improvements and interventions that hold promise for increasing ridership. Baseline measurements of ridership and perceptions of transit use were gathered at two study sites -- Rossmoor, a planned suburban community of older adults; and in Alameda County, an urban area with fixed route transit. The study was designed to (1) determine seniors' perspectives of, and behavior regarding transit use in two locations (urban and suburban) in California; (2) summarize previous work; and (3) develop and test the impact of interventions to increase transit ridership among seniors.

This final report consists of a literature review, a matrix of the types of barriers seniors face at transit stops, a summary of surveys that assessed seniors' perspectives of, and behavior around, transit use in two locations (urban and suburban) in California, and results of two travel training interventions at the two project sites. A second product of the research is a handbook for transit and senior services agencies to use in planning travel training programs for seniors in order to increase transit ridership.

KEY FINDINGS

The urban component of the research surveyed 259 senior citizens in the East Bay regarding travel habits and use of public transportation. The survey results revealed that:

- Of the urban seniors who travel, 79 percent leave their house to go somewhere 5 days or more per week.
- Among the total group of seniors, 58.4 percent reported driving to destinations on their own.
- Most mobile seniors use the private automobile for their travel, even for short distances.
- In the Bay Area, 78.7 percent of seniors believe that they have "convenient access to buses near [their] homes."
- Information about buses remains a major barrier. When asked if they knew about bus routes in their area, 69.2 percent of seniors replied that they knew "little" or "nothing." In fact, when asked about the bus fares and schedules, more than 60 percent of participants stated that they knew "nothing" or "a little." This may indicate a low level of knowledge with the basic information necessary for successful public transit use.
- Qualitative responses suggested that mobile seniors will use public transportation if basic conditions are met, and that transit must be convenient.
- Chief among the public transportation complaints are convenience and safety. A majority of respondents (53.6 percent) feel it is "never" or only "sometimes" safe while onboard, and 53.2 percent feel it is "never" or only "sometimes" safe while waiting at stops.

As an additional component of the research, travel training was conducted for older adults at Rossmoor, a planned retirement community in Contra Costa County. Travel training provides information on how to use public transit in a particular area (routes, fares, e.g.) in order to help overcome barriers related to a lack of information, which is common among older adults. Participants completed a pre- and post-training survey to evaluate the trainings at each site. According to the surveys:

- Almost 86 percent stated that they planned to take public transit more frequently in the future.
- There was a positive shift in participant comfort levels with taking the Rossmoor and County Connection buses to key destinations within the community (all *p*-values <0.004).
- Participant confidence levels with finding transit information (e.g., schedules, routes) increased after training ($p=0.001$).

A separate, four-day travel training for older adults in Oakland, Berkeley and Emeryville also utilized a pre- and post-training survey of 53 participants and found that:

- Participants varied in age and race, but 74 percent were female and 51 percent had at least a bachelor's degree.

- Among participants, 56 percent reported that they were taking the course as a step in planning for their future.
- While 67 percent of the participants used the private auto as their primary mode of transportation, 84 percent stated that they do use public transit on occasion if not regularly.
- Primary transit users tended to be older and live alone more frequently than primary automobile users.
- The training produced a significant increase in knowledge in every assessed area including factors such as how to read the schedules, fares, and the best seats for older adults.
- In addition to increased knowledge, participants reported that they planned to increase their use of all independent modes of accessing transit information, including paper schedules, the internet, brochures and local 511 services available both by telephone and internet.
- In an effort to understand why older adults enrolled in the travel training program, a regression analysis was run to identify factors associated with reason for enrollment. This analysis revealed a significant association between *currently driving* and *planning for the future*.

The study concludes that transit travel training is an extremely effective way to increase education levels and familiarity regarding access to public transit. After participation in the training, older adults possess the knowledge that they need as well as confidence in finding transit information on their own through a variety of sources. Future travel training courses could benefit from this analysis and target current drivers who may have an awareness that they will not always be able to or want to drive. Travel training programs should also explore ways of outreaching to older adult populations that are not already accessing social and recreational services; isolated and transportation-dependent older adults may be the audience who could most benefit from this type of program.

Recommendations from the evidence presented in this research include:

- Continue to research education-based travel training programs.
- Conduct research and intervention strategies to address the concern of crime and safety while on transit.
- Evaluate usefulness of information technology tools for older adults.
- Partner with local transit agencies to market to the older adult population.
- Implement educational-based travel training programs.
- Distribute the travel training handbook to local level transit agencies, older adult organizations, and other stakeholders.

I. BACKGROUND

Much attention is paid to the fact that the population of older adults in California is growing dramatically.[6] Transportation is emerging as a priority issue for this group of people who may not be able to, or who choose not to, drive. Currently, seniors make only about 3 percent of their trips by public transit; 12 percent of older adults have used transit in the past year.[7] Although there are no statewide statistics about transit ridership by older people, San Francisco Bay Area transit operators estimate that 4-12 percent of their patronage consists of riders over 65 years of age.[8] [9]

With increases in age, the percent of the driving population declines dramatically. While some older adults may be able to continue drive safely, many others will reach a point when driving is no longer a safe option. Hence, there is a large portion of the older adult population that has mobility needs that cannot be met by driving.

Although many seniors will continue to drive and depend on private automobiles, eventual declining health and weakened driving skills will require greater reliance on other mobility options, such as reliance on friends and family, volunteer networks, taxis, walking and biking, Paratransit and public transit. However, there are limitations to many of these options.

Barriers to transit use for the older adult population persist

Given the role and transit infrastructure at this time there are many reasons why transit is not an attractive or feasible option for older adults. Older adults, used to private automobile travel, will expect high quality, accessible and convenient public transportation to make the transition from cars easier. Older people will likely be healthier and more educated and active in the future, and are likely to travel frequently to a wider range of destinations than they do today. Additionally, older adults' mobility needs will continue to grow, as trip rates and distances have increased significantly. They will be more likely to pursue a range of activities requiring transportation that meets a more active lifestyle.[10]

Public transportation can be difficult for older adults, especially those with disabilities, to use, and physical or psychological barriers may predispose seniors against public transportation.[11] Although exacerbated by physical disability, similar concerns were found among the non-elderly, suggesting that removing physical barriers to access may benefit more than just the elderly. While these barriers affect other groups, their impacts tend to be felt most strongly by seniors. Some of the most common barriers are listed below:

- lack of information about schedules and routes, perception of inconvenience; unreliable service [12]
- waiting outdoors in uncomfortable station areas [13]
- lack of security and actual and/or perceived crime[14]
- inconvenient pedestrian access to stops [15]

- lack of training for bus drivers to better understand and meet the needs of senior riders [16]

Consequences of Failing to Address this Problem/Opportunity

Failure to address these issues would have important consequences for an auto-dependent elderly population. Although many seniors rely on private cars, their declining functional ability may result in the need to limit or cease driving.[17] For many seniors, this results in a decline in mobility, which has profound physical and psychological implications. In fact, a direct cause of deterioration in the elderly is declining mobility. Studies of driving cessation have found that decreased mobility produces a number of health and mental health problems,[18] [19] including reduced out-of-home activities, and an increase in depression and social isolation.[20] There is also a large, underserved population among the frail and very old elderly population who are unable to drive themselves. As the senior population grows, there will be a greater percentage of frail and poor older adults living alone with little independent mobility.[21] Disability, combined with barriers at bus stops and stations, can prevent their use of transit. If there are not appropriate or accessible transit options for seniors, many will continue to drive beyond capacity, resulting in fatality rates that could approach the number of drivers killed throughout the U.S. in 1995 due to alcohol.[22]

Because of the enormous social consequences for a growing segment of the population, and because of the potential for transit operators to benefit from increased ridership, removing barriers to physical access is a crucial component of a smart transportation strategy. This project provides information on the effectiveness of marketing to older adults. Transit agencies in their marketing strategies will likely have a variety of strategies aimed at a variety of populations. Identifying local barriers in a community and targeting a social marketing intervention (in our case a travel training program) in response to a specific community need can be very effective. This report provides evidence-based information to agencies interested in implementing improvements and interventions in other locations.

Ways in which this Project Addresses the Problem/Opportunity

Identifying and implementing strategies to remove barriers for seniors accessing public transit increases both the ability to use public transit and the quality and/or level of service offered to senior citizens. While it is recognized that not all older adults will want to or be able to take transit, it is likely that there will be an increased number of older adults utilizing public transit due to the general aging of the population. Specifically marketing to older adults is and will be very important over the next 40 years as the population is growing and, as identified by the California Department of Aging, will soon compromise over 30 percent (and 25 percent by 2010) of the total population in California.[23] This is a huge constituency base that public transit has the opportunity to tap into. True, that public transit fares for older adults are often subsidized, but even a subsidized fare is likely to be beneficial to transit revenue. This is especially true since

many older adults ride transit during off peek hours where there is excess capacity available on the transit vehicles.

Project results indicate the benefit of specific interventions, such as travel training, to removing barriers for older adults in urban and suburban areas, when accessing public transit. Marketing strategies such as travel training can also be targeted to younger adults (of both the baby boomer and subsequent generations) to increase familiarity and knowledge of public transit before they reach older age. This opportunity may contribute future older adults' perception of transit use and its feasibility. These interventions can be replicated in other locations in order to increase the alternatives for seniors outside the specific study sites. The research findings are useful to (i) transit agencies throughout California and the country, (ii) municipalities with jurisdiction for the area in which bus stops are located, and (iii) transit customers, primarily seniors, whether able-bodied or disabled. Caltrans and the Federal Transit Administration should also find these products useful because they can provide additional tools in the transit industry's repertoire of methods and ways to improve the quality of service for public transportation customers.

II. INTRODUCTION

The senior population in California is growing dramatically. Public transportation presents an important option for older adults who cannot, or choose not to, drive. A recurrent theme among older adults is that barriers exist when accessing public transit. Many of these barriers are felt by a variety of populations, but can be exacerbated by old age, habits, and familiarity in the older adult population. Common barriers that are specifically challenging to older adults include: waiting outdoors in uncomfortable station areas; lack of information about schedules and routes; the perception of inconvenience; unreliable service; lack of security and actual and/or perceived crime; inconvenient pedestrian access to stops; and lack of training for bus drivers to better understand and meet the needs of senior riders.

This research was designed to (1) determine seniors' perspectives of, and behavior around, bus stops and transit stations in two locations (urban and suburban) in California; (2) summarize previous work; and (3) develop and test the impact of various design improvements and interventions to increase transit ridership among seniors. The focus was on the identification of barriers to transit use and on testing improvements and interventions that hold promise for increasing ridership. Baseline measurements of ridership and perceptions of bus stops and transit stations were gathered at two study sites -- Rossmoor, a planned suburban community of older adults, and in Alameda County, an urban area with fixed route transit.

There are two primary products of the research: a final report to Caltrans and a handbook for transit and senior services agencies to use in planning travel training programs for seniors in order to increase transit ridership. This final report consists of a literature review, a matrix of the types of barriers seniors face at transit stops, a summary of surveys that assessed seniors' perspectives of, and behavior around, transit use in two

locations (urban and suburban) in California, and results of two travel training interventions at the two project sites.

The two study sites for this research were (i) Rossmoor, a planned suburban community of older adults with access to a residential shuttle and fixed route transit and (ii) senior activity centers in urban Alameda County, an urban area with fixed route transit. At Rossmoor, the impact of an on-site travel training program was evaluated. In urban Alameda County, researchers surveyed active older adults at senior activity centers on their transit habits and attitudes, and evaluated a travel training program conducted by a local non-profit. Although these two interventions were different in form and process, they had the same goal of increasing transit knowledge, confidence, and familiarity for older adults wanting to use transit.

III. COMPONENTS OF THE FINAL REPORT

This report summarizes the work conducted under this Task Order:

1. Literature review and matrix of barriers to transit
2. Stakeholders Advisory Group
3. Survey (English, Chinese, and Spanish) of older adults' perspectives of barriers to transit
4. 2008 TRB paper and poster of survey of older adults' perspectives of barriers to transit
5. Rossmoor transit travel training evaluation
6. Urban East Bay travel training evaluation
7. 2008 TRB paper on urban East Bay travel training evaluation
8. Handbook for transit agencies and senior services agencies

Each section is summarized below; the full report is found in the appendix.

1. Literature Review

The literature review describes the importance of older adult transportation and the barriers older adults face when accessing public transit. The most recent research builds on the physical barriers concept and begins to assemble not only a list of barriers to senior use of public transit but also to provide direct recommendations for addressing barriers and increasing ridership among older adults. (See Appendix 1)

Looking exclusively at the barriers to public transportation at bus stops and stations represents an important, but limited, dimension of older adults' transportation needs. To obtain a more complete picture of their mobility needs, habits, and attitudes, future research can include:

- strategies and interventions to address real or perceived issues of crime on public transit;
- effective educational interventions and outreach to encourage public transit ridership;
- information on cultural attachments to a car-dependent lifestyle, and how these are changing with a new cohort of older adults;
- a focus on changing the current transportation policy orientation to align with sustainable environmental principles and individual transit needs;
- the creation of increasingly "flexible" transit options;
- an increased knowledge of transit needs for varied mobility levels; and
- an analysis of how older adults use various types of transportation to meet their mobility needs.

The older adult population is growing, and as this cohort ages it is likely to be healthier, more educated and active, and to travel frequently to a wider range of destinations than its current counterpart. It is also likely to be more car dependent [24,25], since the primary mode of transportation for older adults is driving a private vehicle, followed by ridesharing.

Public transportation is the least used form of travel [26] despite being a necessary option for older adults who cannot or choose not to drive. For the 5% of older adults who do use public transit, this is their primary mode of transportation, and it is reasonable to assume that people choose the best available option for them, making transit a necessary option. [27] This utilization rate is likely to increase as the older adult population grows, and the more public transportation can be made appealing to this population, who put more emphasis on service attributes, such as driver friendliness, than non-seniors [28], the more ridership will increase. [29] If public transit is made more appealing for older adults it will be responding to the population demographic. If transit is not older-adult friendly, there is a huge lost market for transit agencies.

Given the current underutilization of public transportation, and the increasing older adult population it is necessary to understand the habits and barriers that older adults face while accessing public transit. Older adults who currently ride public transportation tend to be low-income, minorities, and women. These populations may have specific transit needs and/or concerns such as financial, language, widowhood and outliving many of their male counterparts. [30,31] As the older adult population with potential need for public transit becomes more diverse and mobile, they will be more likely to pursue a range of activities requiring transportation to support their more active lifestyles. [32] Trip rates and distances have already increased significantly for all groups of older adults. Transportation research and planning efforts must consider the characteristics of this diverse population in order to effectively meet their needs.

Poister (1982) examined the issue of accessibility and inclusion, concluding that the lack of transportation hindered older adults' desire for "mainstreaming" and that transportation planning and policies must account for the stated needs and desires of this population in order to truly have effective and accessible transportation. [33] Later findings

by both the AARP [34] and the US GAO [35] strengthened this argument. Furthermore, Alsnih and Hensher (2003) [36] found that there was a difference in the transportation needs and mobility between the "young" elderly (ages 65-75) and "old" elderly (over age 75), while Cvitkovich and Wister (2001) [37] emphasized the difference in needs between transportation-dependent and transportation-independent seniors. When developing transportation plans, authorities must take special care to address the characteristics of this population such as physical limitations, gender, race, and economic status. [38] Transportation resources must be developed and allocated to consider the environmental and physical factors that are specific to the well-being of this population. [39]

One complex issue that has emerged in the last sixty years is increasing suburbanization and a trend toward aging at home. The desire to age at home, also known as aging-in-place, exacerbates the difficulties in providing effective public transportation, [40]and leads to increased dependence on cars. This dependence has associated risks documented in numerous studies that confirm a correlation between old age and the increased danger of motor vehicle crashes.

Non-drivers, however, face risks as well if they are not able to access or use public transportation. Bailey (2004) identified that older adult non-drivers make 15% fewer trips to the doctor and 65% fewer social trips than older adult drivers. [41] Strategies and interventions must be specifically developed to meet the current and anticipated transportation medical and social needs of this population are beneficial to reducing the risk of health consequences (such as lack of preventative care and depression) from fewer medical and social trips. Transportation promotes quality of life and increases life satisfaction by providing access to social and other activities. [42] It has been shown that older persons who are primarily dependent on public transportation (versus private vehicle use) do not receive the same amount of medical and health care and have high rates of social isolation. [43,44] Harrison and Ragland (2003) made a comprehensive study of the impact of driving cessation on the lives of older adults. [45] They found that, overall, older adults who stopped driving had reduced rates of social interaction and decreased satisfaction in their life activities. These findings support the body of research on limitations on the daily activities of older adults due to inadequate transportation. [46,47,48,49]

Recent studies have begun to address the issue of "barriers" to transit use. Among the first studies to analyze barriers to seniors' use of public transit was Patterson's (1985), which concluded that "barriers" were both psychological (e.g. fear of crime) and physical ones (e.g., problems with accessing bus schedules and bus stops). [50] Later, Rosenbloom (1988) concluded that physical and environmental barriers such as poor route planning or inconvenient bus stops played a larger role in limiting senior transit use than biological barriers such as old age or illness. [51] Lavery (1996) proposed the "travel chain" idea, in which personal barriers (e.g. old age, illness) and vehicular barriers are exacerbated by "built environment barriers" such as poor street paving, confusing block patterns or, in the case of public transit, poor and inadequate routes, schedules, and signage. [52]

Using public transportation can be difficult for older adults, and particularly those with disabilities. Physical or psychological factors may predispose seniors against using public transportation. [53] High on the list of seniors' concerns are accessibility and crime. Iseki Liggett, Loukaitou-Sideris, and Iseki (2001) discuss how elements of the built environment at bus stops can either encourage or discourage crime. [54] Specifically regarding older adults, the AARP (2002) reports inadequate routes, fear of victimization during trips and difficulty boarding among seniors' top concerns. [55]

The following physical barriers to the use of public transportation by older adults have been identified in the literature:

- Environmental barriers (waiting outdoors in uncomfortable station areas for long periods; lack of security and actual crime; inconvenient, unsafe pedestrian approach to stops; and vehicle accessibility and limitations)
- Information and education barriers (lack of information about schedules and routes, perception of inconvenience, and unreliable service; and lack of training for bus drivers to better understand and meet the needs of senior riders)
- Personal barriers (physical limitations to accessing public transportation; perceived crime and lack of security; and psychological barriers to accessing public transportation)
- Policy and planning barriers (flexibility of transportation services; cost of transportation services; and partnerships with local agencies and organizations)
- Technological barriers (utilization of advanced technology)

There is a growing body of research that suggests that government interventions can strategically structure public transit and other services to reduce car use among older adults. Bailey (2006), for example, summarizes the statistics on aging trends and older adult mobility habits and details the impact that the lack of adequate public transportation had on various older adult age groups by ethnicity, home geographical region, and other important factors. [56] Koffman (2004) discusses the legislative actions groups can take to enhance the use of various public transit modes. [57]

No policy on improving older adult public transit can succeed without taking older adult concerns into consideration. [58,59,60,61,62,63] This includes finding the balance between public transportation being both affordable and cost-effective, and addressing concerns of crime and safety. [64,65] Research has begun on older adult mobility and transportation use, and further research needs to be done on the specific transportation needs of older adults and what works best for this population and subsequent generations.

Some older adults may have a difficult time adjusting to new transit habits and learning new skills and systems based on life-long transit habits. Public transit systems must therefore be sensitive to older adults and their changing transit needs. In addition, a wide array of transit options benefits everyone. People of all ages should have access to, be skilled at using and be able to actively utilize forms of transit other than the private automobile. Greater transit flexibility and increased knowledge will better prepare people

of all ages to use their transit systems. These changes will also contribute to building environmentally-sustainable transit systems for the future.

Matrix of Barriers to Transit:

The matrix of barriers to transit is designed to be a tool for transportation agencies and planning professionals in their work to increase public transportation ridership for older adults. Barriers older adults encounter when utilizing public transit are addressed along with design and social marketing solutions. Implementation strategies are identified according to an estimate of the level of time and investment needed to complete them: short term, medium term, and long term. (See Table 1 and Appendix 2)

The matrix describes potential solutions for the following barriers:

- Waiting outdoors in uncomfortable areas for long periods of time
- Lack of security, and actual and/or perceived crime
- Inconvenient/unsafe pedestrian approach to stops and stations
- Vehicle accessibility and limitations
- Lack of information about schedules and routes, perception of inconvenience; unreliable service
- Lack of training for transit and bus drivers to better understand and meet the needs of senior riders
- Physical limitations (physical disability, hearing impairment, vision impairments)
- Perceived crime and lack of security
- Psychological barriers (psychological/cognitive disorder, attachment to car, attachment to perceived independence, fear, concern with getting lost/going the wrong way)
- Flexibility of transportation services
- Cost of transportation services
- Partnerships with local agencies and organizations
- Utilization of advanced technology

Levels of implementation:

Three levels of implementation have been identified: Short-term, Medium-term, and Long-term. These levels have been developed to provide users of this matrix with an idea of the degree of implementation difficulty. These three levels may vary for individual agencies and transit authorities. The three identified levels are not meant to be a comprehensive implementation strategy, but rather, a rough guesstimate of short-term, medium-term, and long-term improvements.

Short-term:

The short-term implementation refers to interventions that can be accomplished in a very little amount of time and cost little to no money. Short-term implementations include interventions such as: building partnerships with other organizations, provide rider assistance services,

ensure seating for older adults while on the bus, and service reliability (on-time service).

Medium-term:

The medium-term implementation refers to interventions that may require some strategic planning as well as being slightly costly. Medium-term implementations include interventions such as: providing benches at bus stops for older adults to rest while they wait, re-locating bus stops to more visible locations, and improve maps and schedules for increased readability.

Long-term:

The long-term implementation refers to interventions that require long-term strategic planning, possibly in coordination with multiple other agencies and professionals. Long-term interventions also are likely to be very costly, and consist of infrastructural changes. Long-term implementations include interventions such as: improving pedestrian paths-to-transit, purchasing and providing low-floor busses, flexible service, and reducing cost/fares for older adults.

TABLE 1

BARRIERS	POTENTIAL DESIGN IMPROVEMENTS AND SOCIAL MARKETING INTERVENTIONS	DEGREE OF IMPLEMENTATION (short / long term interventions)
	ENVIRONMENTAL	
Waiting outdoors in uncomfortable areas for long periods of time	*Design improvements:* • improve bus stops or stations by providing accessible amenities such as bus shelters, improved lighting, and benches for resting[66,67,68] increasing natural surveillance by (re)locating bus stops so that they are visible from surrounding establishments[69,70] • provide Advanced Vehicle Locators (AVL) and Displays allowing consumers to look up exact time of arrival on the internet, as well as arrival time displays at the bus stops to consumers know how long the wait will be and potentially decrease wait times [71,72,73,74] • increase service frequency to reduce wait times, as well as improving transfer services to create shorter waiting time for transfers[75] *Social Marketing:* [76] • advertise improvements made at bus stops and stations • advertise new bus locations in accessible areas • advertise AVL systems	Short, Medium, and Long-term
Lack of security, and actual and/or perceived crime	*Design improvements:* • increasing natural surveillance by (re)locating bus stops so that they are visible from surrounding establishments (to be performed in partnership by transit agencies and municipalities) [77,78] • improved lighting for increased visibility around bus stations and stops to deter crime [79] • provide call boxes [80] • installation of emergency alarms at bus stops so consumers can activate the alarm in the event of danger [81] *Social Marketing:*	Medium and Long-term

	• establish a buddy-system for riding the bus for both initial training and acclimation to public transit, as well as permanent services for those who prefer to ride with a "buddy" [82] • increase police protection and surveillance [83]	
Inconvenient/unsafe pedestrian approach to stops and stations	*Design improvements:* • improve pedestrians routes to ensure safe access to bus stops and stations [84,85,86,87,88,89,90] • install and maintain benches along the pedestrian routes for resting while approaching stops (especially for longer routes where older adults frequent) [91,92,93] • increase visibility of crosswalks and improve crosswalk lighting to ensure that older adult pedestrians are visible to oncoming traffic [94,95,96,97] • provide longer walk phases and countdown signals for pedestrians to allow sufficient time for older adults to cross the street [98,99,100,101] • provide pedestrian refuge islands on wide/busy streets, so older adults can rest if needed [102,103] • move bus stops that are near vacant lots to more populated areas to increase visibility and will also provide naturally occurring surveillance [104,105] • increase, improve, and maintain sidewalk availability, sidewalk texture, width and curb ramps for accessible and safe pedestrian utilization [106,107,108,109,110,111] *Social Marketing:* • develop transit path maps for riders with an emphasis on ADA accessible areas, streets, intersections and bus stops/stations • advertise improvements [112]	Medium and Long-term
Vehicle accessibility and limitations	*Design improvements:* • provide low floor or lift equipped buses to enable easier access while getting on/off busses [113,114,115,116,117,118] • systemized audio and visual announcements of vehicle stops to	Short, Medium, and Long-term

	assist passengers whom are hard of sight or hearing with their current location and approaching vehicle stops [119,120,121] • ensured seating available for older adults and transit operator enforcement of designated seating [122,123,124] • provide ramps for boarding or raised platforms at bus stops for easier access to getting on/off the bus [125,126,127] • provide passenger assistance from transit operator to older adult while getting on/off the vehicle, as well as assistance with packages or luggage that they may be carrying [128,129] • provide handrails for easier access to getting on/off the bus [130,131] provide adequate leg room for passengers for comfort and allow for adequate space during crowded buses [132] • provide easily accessible stop request systems such as bell pushes in various locations throughout the bus [133] • improve maps and schedules for easy readability with large print and color coding to simplify information [134,135,136] • limit crowding on the bus around older adults by providing adequate space and seating [137] *Social Marketing:* • advertise improvements [138] • rider testimonials on promotional materials	
INFORMATION and EDUCATION		
Lack of information about schedules and routes, perception of inconvenience; unreliable service	*Design improvements:* • provide Automatic Vehicle Locator (AVL) information systems for on-line access to real-time arrival times and bus stop displays of next vehicle arrival time [139,140] • improve maps and schedules for easy older adult readability with large print and color coding to simplify information [141,142,143,144] • conduct social marketing to advertise improvements made and available transit services [145] • ensure proper placement and availability of stations for easy older	Short, Medium, and Long-term

	adult access [146,147] • provide a telephone information line for information regarding scheduling, timetables, transfers, and trip planning assistance [148,149] *Social Marketing:* • informational education on availability, options, and where to get more information [150,151,152] • travel training [153,154,155] • transit training before the onset of driving cessation, so older adults are more familiar at the time of driving cessation [156,157,158] • peer-based education (buddy system, mentors, site leaders, and educators) [159,160,161] • PSA on older adult radio stations, transit newsletter availability [162] • advertisements in local senior circulars [163] • ensure proper signage and readability of signs (i.e.: bus routes and timetables at bus stop locations and on the bus) [164] • outreach [165,166] • multi-lingual outreach efforts [167] • partnership with local AARP, DMV and physicians for education and outreach [168,169] • partner with social service organizations [170]	
Lack of training for transit and bus drivers to better understand and meet the needs of senior riders	*Design improvements:* • integrate training for transit employees into routine employee training on the specific needs of older adults on public transportation [171,172,173,174] • ensure consumer assistance by providing helpful drivers/driver assistance with location information, stop identification and requests, transfer information, getting on/off the bus, lifting carts, bags, and packages [175,176,177,178,179] *Social Marketing:* Customer Services training of transit and bus drivers [180,181,182] • how to interact with older adults in a manner that meets the needs of	Short-term

	the older adult consumer • announce upcoming stops for older adults who are not familiar with public transportation, the location, or are not otherwise able to independently identify upcoming stops • ensure older adults are seated before departure so as to reduce probability of injury from movement of bus • request seating be made available for older adults • ensure older adult assistance (from stop/location information to getting on/off the bus) from driver when needed • assistance with fares, seating and boarding/dismounting	
PERSONAL		
Physical limitations • physical disability • hearing impairment • vision impairments	*Design improvements:* • provide low floor or lift equipped buses to enable easier access while getting on/off busses [183,184,185,186,187,188] • systemized audio and visual announcements of vehicle stops to assist passengers whom are hard of sight or hearing with their current location and approaching vehicle stops [189,190,191] • ensured seating available for older adults and transit operator enforcement of designated seating [192,193,194] • provide ramps for boarding or raised platforms at bus stops for easier access to getting on/off the bus [195,196,197] • provide passenger assistance from transit operator to older adult while getting on/off the vehicle, as well as assistance with packages or luggage that they may be carrying [198,199] • provide handrails for easier access to getting on/off the bus [200,201] • provide adequate leg room for passengers for comfort and allow for adequate space during crowded buses [202] • provide easily accessible stop request systems such as bell pushes in various locations throughout the bus [203] • improve maps and schedules for easy readability with large print and color coding to simplify information [204,205,206] • limit crowding on the bus around older adults by providing adequate	Short, Medium, and Long-term

	space and seating [207] • accessible busses and stops to accommodate physical needs [208,209] • routinely clean windows for passenger visibility and to identify the current location of the vehicle [210,211] *Social Marketing:* • advertise improvements [212] • include rider testimonials on promotional materials to garner peer support and trust within the older adult community	
Perceived crime and lack of security *(similar as under environmental)*	*Design improvements:* • increasing natural surveillance by (re)locating bus stops so that they are visible from surrounding establishments (to be performed in partnership by transit agencies and municipalities) [213,214] • improved lighting for increased visibility around bus stations and stops to deter crime [215] • installation of emergency alarms at bus stops so consumers can activate the alarm in the event of danger [216] *Social Marketing:* • establish a buddy-system for riding the bus [217] • police protection and surveillance [218]	Medium and Long-term
Psychological barriers • psychological/cognitive disorder • attachment to car • attachment to perceived independence • fear • concern with getting lost/going the wrong way	*Design improvements:* • services can include “guaranteed ride home” program, which allows consumers to obtain a free-of-charge voucher for a taxi or rental car in case of emergency or being stranded without your anticipated ride home, this may alleviate some anxiety about being stranded without being able to get home [219,220] • provide flexible service beyond “fixed-routes” in order to pick seniors up where they are and drop them off where they need to go, and reduce walk and wait times while simultaneously alleviating concerns the consumer may have about not getting where they need to go [221]	Short, Medium, and Long-term

	• overall cleanliness of the vehicle for consumer satisfaction [222] *Social Marketing:* • advanced trip planning assistance (via telephone, internet, in-person, training, etc.) [223] • provide or promote a bus-buddy system [224] • promote individual experimentation with transportation alternatives [225] • promote a sense of control for the rider [226] • promote safety of transit service [227] • personal assistance with the transition from car to public transportation [228,229] • welcome new public transportation users [230] • partner with social services organizations [231]	
POLICY and PLANNING		
Flexibility of transportation services	*Design improvements:* • increased frequency of bus vehicles to reduce wait times and increase availability [232,233] • longer service hours to accommodate the needs of older adults and their preferred travel times [234,235] • increased number of routes routed specifically where other routes do not go, and locations which are frequented by older adults [236,237] • increased stops to reduce walking for older adults and strategic placement of bus stops near facilities and locals that older adults frequent [238,239] • provide sufficient amounts of Paratransit for older adults who utilize this services and promote the services for those who do not already utilize it [240,241] • provide additional (to Paratransit) door-to-door services for easy accessibility and travel for older adults [242,243] • provide Taxi services for older adults [244,245,246] • provide on call/same day scheduling of transportation for the	Short and Medium-term

	spontaneous needs of older adults [247,248] *Social Marketing:* • advertise improvements [249]	
Cost of transportation services	*Design improvements:* • reduced rates for older adults to accommodate for lower or fixed income individuals [250] • outside agencies (local organizations and non-profits) can provide transportation financial support by purchasing tickets or voucher for older adult riders [251] • subsidies or co-payments from governments, businesses and individuals to provide lower-cost public transit for older adults [252] • secure funds (public and private) for financially stable public transit through policy and outreach to funding sources such as foundations [253] *Social Marketing:* • advertise improvements [254]	Medium and Long-term
Partnerships with local agencies and organizations	*Design improvements:* • conduct social marketing of services to conduct outreach and increase ridership [255] • provide customer travel training to familiarize customers with transit services [256,257,258] • provide training for transit drivers to ensure the needs of older adults are being met while riding public transit [259,260,261] • provide travel assistance by transit operators for older adults who request such service [262,263] • availability of information and referrals must be accessible for older adults (such as partnerships with local organizations that currently serve older adults) [264,265] • travel ambassadors and mentors to acclimate older adults to riding public transportation, as well as provide them with the necessary	Short-term

	information and confidence needed to ride transit [266,267] • provide mobility management services to assist older adults in their planning for their transportation needs as well as provide referrals to other transit agencies and agencies whom can assist with transportation needs of the individual [268,269] • incorporate consumer feedback, because it is critical to service to understand the needs and requirements the older adult population poses to transit agencies [270] • coordination of services with other transit agencies is critical to ensure that there are minimal gaps in transit for older adults to reduce wait-times, trip time, and overall inconvenience of public transit [271,272] • integrate volunteer networks and services into the coordination of services, volunteer services are likely to provide door-to-door transit for older adults in volunteer private automobiles [273,274,275,276,277] *Social Marketing:* • advertise improvements [278]	
TECHNOLOGY		
Utilization of advanced technology	*Design improvements:* • provide low floor or lift equipped buses to enable easier access while getting on/off busses [279,280,281] • systemized audio and visual announcements of vehicle stops to assist passengers whom are hard of sight or hearing with their current location and approaching vehicle stops [282,283,284,285] • AVL technology [286,287,288,289] • longer walk phases for pedestrians to ensure that older adults have sufficient time to cross the street (especially on wide and busy streets) [290,291] • implement traffic-calming measures to reduce speed of cars to make it safer for older adults to walk about and cross the street [292] • improve intersections for multi-use transportation modes primarily	Medium and Long-term

	walking for older adult pedestrians, pedestrian/car visibility, and sufficient walk phase timing for older adults mobility needs [293] *Social Marketing:* • advertise improvements [294]	

2. *Stakeholders Advisory Group*

In order to ensure that the research and final project reflected statewide stakeholder interest, an Advisory Committee was formed to provide guidance throughout the study. The stakeholders included:

- Peter Steinert, Judith McBrine, Jila Priebe & Brad Mizuno, Caltrans
- Nathan Landau, Alameda-Contra Costa Transit District
- Sandra Fitzpatrick & Carol Sewell, California Commission on Aging
- Patti Yanochko, Center for Injury Prevention Policy and Practice
- Charles Rivasplata, City & County of San Francisco Planning Department
- Celinda Dahlgren, Contra Costa County Connection
- Gretchen Hansen, Rossmoor Retirement Center
- David Wilder, Senior Affairs Commission San Bernardino County
- Margaret Heath, South Coast Area Transit
- Kimberly B. Martinson, Transportation Management Association of San Francisco

The Advisory Committee met at critical development stages throughout the study for a total of six meetings. These meetings assured that stakeholders and Caltrans had the opportunity to provide feedback and input to ensure that the results and project scope were optimal for older Californians. Specific examples of valuable feedback included guidance on the literature review, the formation and development of survey questions, data analysis, and the final handbook.

3. *Survey (English, Spanish and Chinese) of Older Adults' Perspectives of Barriers to Transit*

In order to gain a better sense of senior citizens' daily transit habits and their attitudes about public transportation, researchers at the UC Traffic Safety Center conducted a survey of seniors in the eastern San Francisco Bay Area (i.e. East Bay). The East Bay provided an ideal sample population pool of urban seniors living in a densely populated, urban California environment with relatively efficient public transportation. (See Appendix 3-5 for copies of the surveys)

Researchers designed a paper-based qualitative and quantitative survey that relied on multiple-choice and fill-in-the-blank responses. It was distributed at ten senior citizen activity centers in the cities of Oakland, Berkeley, and Emeryville over a seven-month period between September 2006 and March 2007. The 10 centers that agreed to the surveys were chosen from 16 identified as potential survey sites. The researcher and senior center manager then mutually agreed upon an appropriate day and time that corresponded to high-volume times when the most number of seniors visited each center.

On the day of the survey, a small table was set up in the activity center and researchers approached all passing individuals who physically appeared to be 55 and over to

determine if the individual would voluntarily participate in the survey. As an encouragement, the researcher informed individuals that participants who completed a survey would be enrolled in a raffle for a gift certificate. Seniors were not obligated to take the survey and were in no way pressured into doing so. If an individual agreed to participate, he or she was provided the necessary materials: a paper survey and pencil.

Seniors completed the surveys on their own accord with no time restrictions. If a senior required assistance due to language, vision, or physical difficulties, the researcher present assisted by reading the questions and completing the appropriate answer choice based on the respondent's response.

A total of 259 surveys were collected and analyzed. Only affirmative, legible responses were accepted and coded. Nominal and ordinal responses were assigned a number and coded accordingly. Ratio responses were coded along value of response. Non-responses to any particular question were coded a "non-response" ("-99" suffix) and excluded from this analysis. Statistical work was done using MS Excel.

The respondents' demographics and responses revealed no statistically significant relationship between income and car use. Both lower and higher income individuals use the private automobile as their primary mode of transportation. The same was true when analyzing gender and car use; both men and women are inclined to drive to get to their destination.

Based on the survey results and analysis, several key findings emerged:

- Of the urban seniors who travel, 79 percent leave their house to go somewhere 5 days or more per week.
- Among the total number of seniors, 58.4 percent replied that they drive to destinations on their own.
- Most mobile seniors use the private automobile for their travel, even for short distances.
- In the Bay Area, 78.7 percent of seniors believe that they have "convenient access to buses near [their] homes."
- Information about buses remains a major barrier. When asked if they knew about bus routes in their area, 69.2 percent of seniors replied that they knew "little" or "nothing." In fact, when asked about the bus fares and schedules, more than 60 percent of participants stated that they knew "nothing" or "a little." This may indicate a low level of knowledge with the basic information necessary for successful public transit use.
- Qualitative responses suggested that mobile seniors will use public transportation if basic conditions are met, and that transit must be convenient.
- Chief among the public transportation complaints are a lack of convenience and safety. A majority of respondents (53.6 percent) feel it is "never" or only "sometimes" safe while onboard, and 53.2 percent feel it is "never" or only "sometimes" safe while waiting at stops.

Survey results suggest that personal fears and lack of information pose a significant barrier for older adults when accessing public transportation. We do not assume that the information available is bad for older adults. However, not all older adults have easy access to transit information. Many of the participants in the travel training programs benefited from obtaining maps and schedules, learning how to read the maps and schedules, as well as learning how to independently access additional transit information. These findings are consistent with the literature review conducted for this project. Barriers – environmental and personal – continue to exist for seniors. However, such barriers can be addressed through a variety of actions including education, policy, and design.

4. 2008 TRB Paper and Poster of Survey of Older Adults' Perspectives of Barriers to Transit

After completing the first phase of the urban study site, the TSC submitted a paper to the 2008 Transportation Research Board (TRB). (See Appendix 6) The research was accepted for a poster presentation in the Transit Quality of Service Measurement section, and researchers were able to share the above findings at a national level. (See Appendix 7) During the poster presentation there was significant interest expressed in this work, as transportation professionals sought out new and innovative ways to address this population's transit needs and potential ridership.

The TRB paper addresses (i) barriers for older adults at transit stops and stations, and (ii) older adult public transit habits and attitudes. This discussion presents the initial findings of a survey on urban older adults' transit habits and attitudes. The preliminary findings suggest that older adults do not have the information they require in order to access public transit, are primarily concerned with real or perceived crime while utilizing public transit, and would be likely to ride public transit if the right conditions were met. Further research and actions are suggested to complete the understanding of older adult transit habits and needs.

The study was designed to determine seniors' perspectives of, and behavior around, bus stops and transit stations in two locations (urban and suburban) and to test the impact of various interventions to increase transit ridership among seniors. It was sponsored by the California Department of Transportation (Caltrans) and was conducted by U.C. Berkeley's California Partners for Advanced Transit and Highways (California PATH) and Traffic Safety Center. The study gathered baseline measurements of ridership habits and perception of public transit at two study sites – (i) Rossmoor, a planned suburban community of older adults, and (ii) senior centers in Alameda County, an urban area serviced with fixed route transit. At Rossmoor, we evaluated the impact of transit training for residents of the community. At the senior centers we surveyed older adults on their transit habits and attitudes, and we are presently in the process of developing an evaluation measure on the impact of a social marketing/outreach campaign. Any changes in ridership and perception will be measured through post-intervention observations, focus groups and surveys. Findings from an analysis of data from 259 completed survey

questionnaires are presented in the TRB paper.

Among the findings from the survey:

- Most Bay Area urban seniors travel frequently and rely heavily on their own private automobiles. Close to 79% of those surveyed leave their house to go somewhere 5 days or more per week. The survey asked about daily events such as grocery shopping, going to restaurants, and visiting family. For each mentioned activity over 50% of seniors responded that their primary mode of transportation was the private automobile. In addition, a majority of seniors (58.4%) replied that they drive themselves to places.
- A vast majority (79%) of seniors in the Bay Area believe that they have "convenient access to buses near [their] homes." Yet it appears that information about buses remains a major barrier. When asked if they knew about bus routes in their area, most seniors (69%) replied that they knew "little" or "nothing".
- Bus reliability and operations received high positive feedback. Bus reliability perception remains high (67.4% of seniors believe buses are "usually" or "always" reliable) as well as bus frequency (58.6% believe "usually" or "always" frequent) and bus rapidity (54.2% believe "usually" or "always" rapid). Yet issues of safety, peer acceptance, and information remain low. Seniors' perception of safety remains low, no matter on the bus (53.6% feel it is "never" or only "sometimes" safe onboard) or waiting at stops (53.2% feel it is "never" or only "sometimes" safe at stops).
- When asked about how considerate buses are of "senior citizen" concerns, 54.2% feel it is minimal. Information poses a similar barrier. Seniors find that schedules and route maps to be harder to understand than they would like (54.8% find maps and schedules "never" or only "sometimes" easy).
- A surprising finding is the perception of transit fare costs by senior citizens. The percentage of respondents who feel fares are "never" inexpensive (22.3%) received the highest negative perception for questions related to their perception of public transit.
- Open-ended responses by seniors speak to the prevalence of the dependence on private automobile that may be the result of already irrational biases against public transportation. The results indicate the need to actively clear up any misconceptions or provide new information about the convenience of public transit.
- Survey responses found no statistically significant difference between income and car use. Both lower and higher income individuals use the private automobile as their primary mode of transportation. Again, the results are not surprising when analyzing gender and car use. Similar proportions of men and women used public transit.

Results from this survey on urban older adults reveal similar patterns to past studies. First, barriers – environmental, educational, personal, planning and policy, and technological – continue to exist for seniors. Second, such barriers need to be identified,

addressed, and dismantled in order to increase the number of seniors who use public transit. All barrier categories need to be addressed.

Travel Training

Transit travel training is a mechanism for teaching people how to use public transit. The research presented here focuses on travel training programs specifically geared towards older adults who do not have the necessary familiarity or knowledge to successfully access public transit.

There are a variety of ways to organize a travel training program. Programs can be designed as an individual or group training. They can be administered by any number of organizations and agencies such as transit agencies, residential facilities, and older adult advocacy organizations. The style and administering of the program will vary depending on the target population and resources available.

Both trainings presented in this report used the group model for travel training. Training at the Rossmoor site was administered by Rossmoor staff, and at the urban site training was administered by a local non-profit organization working to keep older adults healthy and mobile. Both sites conducted a pre- and post-training survey on transit habits and knowledge to evaluate the impact of the travel training programs. The research presented in this report reflects the findings from these travel training evaluations.

5. Rossmoor Transit Travel Training Evaluation

A transit travel training evaluation assessed the effectiveness of an in-person, transit training program offered at a planned retirement community, the Rossmoor Senior Adult Community in Walnut Creek, California. The ongoing transit training classes teach residents about local transit options and information resources, and how to plan future trips. They also include a bus tour of two major bus routes available to the community. The classes draw upon social cognitive theory and its emphasis on self-efficacy to encourage older travelers to learn about public transit use and to promote desired behaviors in seniors. (See Appendix 8)

A primary motivation of this study was to examine stated and actual behavioral changes following the Rossmoor transit training. The before-and-after and longitudinal surveys provided researchers with two methods for examining training impacts: immediate (intended response) and longitudinal (change over time).

The before-and-after survey was conducted in conjunction with six training sessions, held June through August 2007. Two sessions were conducted on a single training day of each month. Each questionnaire took approximately 15 minutes to complete. Forty-two residents participated in this study. Prior to the training, respondents completed a "before" questionnaire to assess their: 1) experience with different transportation modes, 2) current travel behavior, 3) public transit attitudes, 4) barriers to transit use, and 5) training program expectations. Next, they participated in the two-hour training, led by the

transportation coordinator at Rossmoor. Immediately following the session, researchers administered the "after" questionnaire, which focused on potential changes in transit attitudes, knowledge gained through the training, and intended changes in travel behavior. The "after" survey also provided participants with the opportunity to evaluate the training program and to suggest improvements.

Key findings from both study components address: 1) intended and actual travel behavioral changes, 2) public transit barriers, 3) transit information resources, and 4) transit training feedback. Findings from the before- and after-surveys:

- Immediately following the training, 85.7 percent of participants stated that they intended to take transit more frequently in the future.
- There was a significant positive shift in participant comfort levels for the Rossmoor and County Connection buses.
- Participant confidence levels with finding transit information (e.g., schedules, routes) increased after training.

Key findings from the longitudinal survey include:

- Although the private auto remained the primary mode for 67.2 percent of respondents after the training, there was a significant decrease of 19.7 percent in private auto use.
- There was a significant increase of 14.8 percent in public transit use after training.
- Use of transit information resources increased significantly after training.

The Rossmoor transit travel training program resulted in an increase not only in expected use of transit, but in actual use as well. Researchers have identified several ways in which to expand this successful program and further enhance access to transit services, such as:

- developing a follow-up class one month after the initial training, as older adults may need repeated sessions to strengthen their memories and understanding;
- adding training on evening routes and other public transit options (i.e., BART and Muni); and
- providing uniformity across all sessions to ensure participants are provided with the same information and handouts.

Other suggested improvements include:

- media campaigns encouraging seniors to plan ahead;
- area- or provider-specific websites that supply riders with reliable, up-to-date information about available transportation options; and
- streamlining connectivity between transit providers to improve transfers and accessibility for older adults; and
- offering more direct and evening routes.

Opportunities for further research include re-surveying the before-and-after participants to assess behavioral change and modal shifts over time. Additional research could include post-training focus groups where class feedback, travel behaviors, mode choice, and public transit barriers are probed in greater detail. In addition, researchers could conduct similar studies in both urban and rural areas, which may offer greater understanding into the transportation needs of older adults. Finally, research could be expanded to examine more diverse populations (e.g., different ethnic groups and income levels).

6. Urban East Bay Travel Training Evaluation

Based on findings from the initial survey in the East Bay Area, researchers partnered with a local nonprofit organization, United Seniors of Oakland and Alameda County (USOAC), to conduct a transit travel training. This program addressed educational barriers to accessing public transit that were present for older adults. (See Appendix 9 and 10 for pre and post evaluation questionnaires)

The workshop-based training was held over three days. The first workshop introduced the types of local public transit available in the area and assessed the groups' understanding of public transit. The second workshop introduced curriculum training materials, including the fares, schedules, tickets, route information, etc. on the two primary public transit systems in Alameda County: Alameda and Contra Costa County Transit (AC Transit) bus system and the Bay Area Rapid Transit (BART) subway system. The third workshop reviewed the materials with participants, answered participants' specific questions, and concluded the workshop-based training. For the field-based training component, participants and training instructors practiced riding both AC Transit and BART.

The following are characteristics of travel training participants:

- The majority (74 percent) of participants in the travel training program were women. Seventy-eight percent were 65-84 years of age. Fifty-one percent of the participants were educated with at least a Bachelor's Degree. The three prominent ethnic/racial categories were White/Caucasian (41 percent), Black/African American (31 percent), and Asian (14 percent). Eighty-six percent of the participants stated that their income was lower than $30,000. Sixty-eight percent stated that they lived alone. Seventy-six percent of participants stated that their self-reported health status was good, or very good, and 44 percent reported that they had health concerns or anxieties that affected their decision and/or ability to ride public transit.
- The most frequently stated reason for participation was planning for the future (56 percent). Other reasons included: feeling that they had no choice (42 percent), could not afford a car (28 percent), environmental concerns (26 percent), a medical condition that impacted the ability to drive (20 percent), or being encouraged to attend by a family member or friend (14 percent). When asked about how they learned of the travel training program, 84 percent of participants said they had heard about the travel training program through the senior activity

centers.

- While over half (58 percent) of the participants were current drivers, only 37 percent used a personal automobile as their primary mode of transportation. Forty-five percent used public transportation as their primary mode of transportation, and 42 percent used transit one or more times a week. Eighty-four percent stated that they did use public transit (although, not as their primary mode and it should be noted that the East Bay Area has a variety of transit options, and many people use the Bay Area Rapid Transit to go to San Francisco on occasion).
- The majority of the participants who used a personal automobile as their primary mode of transportation were female (67 percent). Thirty-three percent of all drivers were aged 55-64 and 50 percent were aged 65-74. Almost half (46 percent) of drivers lived alone.
- Planning for the future was the most common reason for enrollment in the travel training program (56 percent). Participants citing this as the reason for enrollment were more likely to be current drivers than to use public transit as their primary mode of transportation. Regression analysis revealed a significant association between *currently driving* and *planning for the future*.

Evaluation of survey results revealed a significant increase in participant knowledge after completion of the travel training course. In addition to increased knowledge, participants reported that they planned to increase use of all independent modes of accessing transit information, including paper schedules, the internet, brochures and local 511 services available both by telephone and internet.

Participants were also asked if they had any concerns regarding accessing or using public transit. The five most common concerns included: not having enough information regarding public transit routes (61 percent), lack of information regarding schedules (51 percent), concerns with public transit taking too long (45 percent), a fear of falling on the bus (40 percent), and concerns with crime at the bus or transit stop (39 percent).

Contrary to the literature, this study found that many of the older adults in the East Bay area use public transit as their primary mode of transportation, and almost all of the participants use public transit sometimes. Despite having prior experience with public transit, participants enrolled in the course, suggesting that older adults want additional experience with transit. While many participants came with preexisting knowledge and familiarity, it should not be assumed that the general population of older adults has prior knowledge and experience with transit. Individual travel training programs must assess the transit knowledge of their participants prior to the training, as well as be prepared to instruct individuals with varying levels of transit familiarity.

The study concludes that transit travel training is an extremely effective way to increase education levels and familiarity regarding accessing public transit. After participation in the training, older adults possess the knowledge that they need as well as confidence in finding transit information on their own through a variety of sources. Future travel training courses can benefit from this analysis and target current drivers who may have an awareness that they will not always be able to or want to drive. Travel training programs

should also explore ways of recruiting older adult populations that are not already accessing social and recreational services; isolated and transportation-dependent older adults may be the audience who could most benefit from this type of program.

7. 2009 TRB Paper on Urban East Bay Travel Training Evaluation

After the 2008 poster presentation at TRB, researchers submitted and were accepted for an oral presentation of the travel training evaluation (described above). This presentation was given during the Public Transportation Marketing and Customer Amenities session, sponsored by the Public Transportation Marketing and Fare Policy Committee. The presentation was received well, and thoughtful questions were asked regarding additional barriers older adults may have when using public transit, as well as how to reach older adults who have fewer social networks and may be in the most need of transit knowledge. (See Appendix 11 and 12 for paper and presentation)

The presentation covered the background and purpose of the research, an overview of the study, a summary of the travel training surveys, results from the surveys, lessons learned, and conclusions based on the research.

The set of slides used to create the power point presentation allows for the further dissemination of the research findings, and a useful means for distilling the information to a broad audience.

8. Handbook for Transit Agencies and Senior Services Agencies

The intent of this handbook is to provide both transit agencies and older adult professionals' guidance and encouragement on how to begin offering a travel training program in a community. (See Appendix 13)

Travel training offers an introduction and orientation to fixed route public transportation, including how to read schedules and pay fares, in addition to hands-on orientation. The social context of travel training provides a peer learning environment that reinforces training objectives. The goals of travel training are to:

- Increase participant knowledge of fixed-route public transit systems
- Provide experiential learning that familiarizes participants with riding transit
- Increase confidence in riding public transit alone or with others
- Increase independent mobility so that participants can maintain full, active, and satisfying lives

Without a formal introduction to public transit, some may find it intimidating. Learning how to ride public transit through a travel training program can be a safe and effective way for people to become familiar with their local transit systems. The handbook provides a case study of the training that was conducted in Alameda County (described in detail above), and offers a number of suggestions for agencies and professionals to consider when designing a travel training, including:

- The use of resources that have already been developed (a list of such resources is contained in the handbook), while customizing them to meet regional needs.
- Adapt existing training curricula to meet the specific needs of a region.
- Assess the availability of public transportation in the region to help guide curriculum development. When assessing local public transportation consider the following:
    - Is public transit widely used in your region?
    - What are the major public transit agencies in your community?
    - Does public transit have a wide catchment area in your community?
    - What are the various types of public transit available in your community?
    - What is the history of public transit in your region?
    - Are there seasonal/weather challenges that affect public transit use?
- Determine the needs of the older adult population in the community by conducting a small survey of older adults, and assessing the level of knowledge and any fears or apprehensions this population may have about riding public transportation.
- Select a training model based on the need of the older adults in the community. There are three popular models of travel training: one-on-one, peer-to-peer and group training.

The handbook provides a description of the other elements necessary to a successful travel training program:

- Choosing the optimal style for disseminating information (activity-based, lecture-based, a combination of activity and lecture-based methods, and printed take-away materials).
- Basic elements to include in the travel training.
- Addressing safety issues (physical issues and issues of crime).
- Finding stakeholders and creating partnerships.
- Ways to approach potential stakeholders.
- Finding funding on the local, state and national level.
- Getting everything in place to implement the curriculum.

The handbook will be disseminated to transit agencies and older adult organizations and it is our hope that it will be a useful tool in the development of future travel training programs throughout California.

IV. DISCUSSION

This research has provided an opportunity to further understand the travel habits, needs, and concerns of older adults, and to view two parallel transit training evaluations. These two travel trainings were similar in their end goal – to increase older adult's knowledge and familiarity with using transit to increase their transportation options. However, the location, demographics and structure of the trainings were quite different.

The Rossmoor community site is located in a fairly wealthy suburban area of Contra Costa County and caters to residents living in this community. Participants in this community were predominantly Caucasian and female, with a wide range in annual income. The urban Alameda County sites, on the other hand, were located throughout Alameda County in a range of locations with a variety of socio-demographic characteristics. Again, the population was largely female and fairly well educated, but there was also a range of racial and ethnic backgrounds and a greater representation of low- to moderate-income levels. The Rossmoor site was a one-day training including classroom and experiential training, in contrast to the Urban Alameda County training, which included four days of classroom-based training plus field training.

While the trainings were different in participant demographics and location, they shared the same beginning goal (to increase transportation options for older adults), and the end result (to educate and increase confidence in riding transit) was successfully met for both. Both sites had positive results, showing that transit travel training for older adults can in fact increase transit knowledge and confidence. Both of the research sites, taken on their own and in combination with one another, add valuable research to the field of older adult mobility – adding more to the knowledge base than the sum of the study's parts. This research has shown that transit travel training programs are an effective strategy in improving mobility options for older adults.

The importance of older adult transportation options is great, and it is beneficial to both the older adult population and the entire population to research strategies that ensure that the concerns of this vulnerable population are being addressed. This work cannot be done without the voice and participation of older adults themselves; both sites have been fortunate to have hands-on experience working with this population. This research confirms the significance of one important piece of the effort to improve mobility for all older adults.

Opportunities for Further Research

Travel training has been explored in this study and found to be an effective and immediate way to increase participant knowledge, confidence and ultimately, the use of public transit. However, the communities studied here can be categorized as urban and suburban areas with relatively good access to public transportation, both local and regional. Communities that have sparse to no transit systems pose a very different reality for older adults who are no longer driving. Rural communities pose a particular challenge

to public transportation for older adults. Travel training programs in these communities would be structured and organized with the specific needs of the rural community and would likely be very different than the trainings presented in this research. Research to implement and evaluate a rural- transit travel training would provide insight into the feasibility of this type of program for rural older adults who are at increased risk from isolation due to lack of transportation.

Recommendations

Research recommendations:

- **Continue to conduct research on education-based travel training programs**.
    - Specifically conduct a longitudinal cohort study to track older adults' transportation habits after participation in a travel training course.
- **Conduct research and intervention strategies to address the concern of crime and safety while on transit**. Alameda County is an urban area, where many of the older adult participants expressed concern with crime and safety while on transit. Strategies that both mitigate real and perceived crime may have a positive impact in older adults' use of public transit.
- **Evaluate usefulness of information technology tools for older adults.** Examples of transit information technology include real time transit location technology, Internet-based transit information, and phone system transit information. While use of technology might be a barrier itself, there may be ways in which information technology can be more "user friendly;" e.g., by installing real time bus location information signs in senior centers.
- **Research development of transit in rural areas:** Travel training requires availability of transit services in a region. Over 80% of California's landmass is considered rural[295], and transit can fill mobility needs in rural areas where people need to travel distance to health, social and recreational activities.

Marketing recommendations:

- **Implement travel training programs**: This report has illustrated that travel training is an effective way for older adults to gain knowledge of and familiarity with using transit. Travel trainings can be implemented by or take place at places such as:
    - Senior Activity Centers,
    - Senior residential homes,
    - Older adult organizations,
    - California Department of Motor Vehicles,
    - and local and regional transportation agencies.
- **Partner with local transit agencies to market to the older adult population**: Cooperative projects can include:
    - identifying areas where older adults currently reside and frequent,
    - identifying existing routes and transit lines that are accessible from the existing older adult population,
    - coordinating connectivity between transit providers to improve transfers and accessibility for older adults along these routes,

- **Distribute the travel training handbook to local level transit agencies, older adult organizations, and other stakeholders.** As part of the final project for this report, a travel training handbook was designed with the intention that it can be used as a tool to begin implementing more travel training type programs in California.

V. ACKNOWLEDGEMENTS

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VI. APPENDICES

TABLE OF APPENDICES

Removing Barriers for Seniors at Transit Stops and Stations and the Potential for Transit Ridership Growth

Literature Review

Prepared by:

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Jill F. Cooper
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Introduction:

As the baby boomer generation ages, the population of seniors in California is growing rapidly (California Health and Human Services Agency, 2003). Among the many needs of this aging population is the need for older adult sensitive and effective transportation. Transportation planners and policymakers will likely be facing issues regarding older adults mobility as the population ages whether they plan for it or not. However, transportation agencies and older adults alike can benefit from pre-planning that addresses foreseen needs of the older population. If we wait to react to the needs of the older adult population, it will likely be too late for many older adults to have sufficient and appropriate transportation. For example, many auto companies are planning for the aging of the population by designing automobiles that are increasingly older-adult friendly. Public transit also stands to benefit from this preventative approach, because while not all older adults will take public transit, many will, including middle-aged transit riders of today will soon be older adults.

This research addresses one specific issues and a subsequent marketing strategic that can be tailored to be specific to the older adult population and their transportation needs. Specifically marketing to older adults is and will be very important over the next 40 years as the population is growing and, as identified by the California Department of Aging, will soon compromise over 30 percent (and 25 percent by 2010) of the total population in California. This is a huge constituency base that public transit has the opportunity to tap into. While older adults transit riders may not be as lucrative one older adult at a time through their often subsidized fares, given the assumption that because there will be more older adults, hence more older adults doing every thing including riding transit, transit agencies will likely see an increase in revenue (however slight). This is especially true since many older adults ride transit during off peek hours where there is excess capacity available on the transit vehicles.

The purpose of the current research proposed by the California Department of Transportation (Caltrans) and conducted by UC Berkeley's California Partners for Advanced Transit and Highways (California PATH) and Traffic Safety Center is to investigate older adults' transportation habits and the barriers they experience in using public transportation, primarily at bus stops and transit stations. This information will enable transportation planners and policymakers to better serve the older population. Many sectors of our society are aware that older adults will soon be over 30 percent of the population; hence there will be more adults engaging in society in many ways. Public transit is not immune to this and this research assumes that the increase in older adult numbers will likely lead to a parallel increase in public transportation use. It is vital that transportation services be better targeted to meet the needs of this population.

The primary mode of transportation for older adults is driving a private vehicle. Ridesharing is second while public transportation is last (Ritter, 2002). Public transportation is a necessary option for older adults who cannot drive, or choose not to. Where transit is available, and not driving is not an option, older adults can be dependent on public transit. For the 5% of older adults who do use public transit, this is their primary mode of transportation, and it is reasonable to assume that people choose the best available option for them, making transit a necessary option (Ritter, 2002). This utilization rate is likely to increase as the older adult population increases, and it would be advantageous to make public transportation more inviting to older adults and also boost ridership (Rosenbloom, 2003). If public transit is made more appealing for older adults it will be responding to the population demographic. If transit is not older-adult friendly, there is a huge lost market for transit agencies. Given the general

underutilization of public transit, and the increasing older adult population it is necessary to understand the transit habits and barriers that older adults face while accessing public transit.

Older adults are a very diverse population and have a range of transportation needs. Older people in the future will most likely be more healthy, educated, and active than their present counterparts; they are likely to travel frequently to a wide range of destinations and be more car dependent (Cobb and Coughlin, 2000; Rosenbloom, 2003). Older adults accustomed to private automobile travel will demand high quality public transportation. Satisfaction in transit options has been shown to be a significant factor in utilization rates of transit for seniors. Additionally, seniors put more emphasis on service attributes, such as driver friendliness, than non-seniors (Koffman and Salstrom, 2001). The more flexible and service oriented the public transportation is, the more likely people are to use it. Older adults as a group are increasingly healthier and more mobile but they still face physical limitations. For example, in the event of a pedestrian-to-car crash, frail older adult pedestrians (65 years of age and older) are more prone to injury compared to their younger counterparts. Older adults are often vision or hearing impaired, and may have diseases such as arthritis which make it more difficult to move freely (Dewar *et al.*, 2004). Whether they drive or take public transit, it is critical to understand the demographics of this population as well as their physical needs.

Older adults who ride public transportation tend to be low-income, minorities, and women. These populations may have specific transit needs and/or concerns such as financial, language, widowhood and outliving many of their male counterparts (Rittner and Kirk, 1995; Rosenbloom, 2003). Spain (1997) and Rosenbloom (2002) articulate that women comprise the majority of the older adult population and are less likely in the coming generations to have others to care for them or the resources to fulfill their transportation needs. They also point out that older adult minorities report having more mobility limitations and tend to take fewer trips than their white counterparts (Spain, 1997; Rosenbloom, 1999). As the older adult demographics continue to diversify with regard to race, class, and gender, older adults' mobility needs will also continue to grow. Trip rates and distances have increased significantly for all groups of older adults, and they will be more likely to pursue a range of activities requiring transportation to support their more active lifestyles (Rosenbloom, 2003). Transportation research and planning efforts must consider the characteristics of this diverse population in order to effectively meet their needs.

Transportation Needs for Older Adults:

Studies from the past thirty years have begun to address public transit concerns of older adults. A Congressional report from the U.S. Comptroller General (*Mass Transit for Elderly*, 1977) was one of the first studies to address the deficiencies in transit services to seniors and propose recommendations. The recommendations prioritized organizational changes and only briefly mentioned physical barriers. Almost all studies or surveys find that the need for transportation is a high priority for older adults. Poister (1982) examined the issue of accessibility and inclusion, concluding that the lack of transportation hindered older adults' desire for "mainstreaming" and that transportation planning and policies must account for the stated needs and desires of this population in order to truly have effective and accessible transportation. Later findings by both the AARP (Houser, 2005) and the US GAO (2004) strengthened this argument. Furthermore, Alsnih and Hensher (2003) found that there was a difference in the transportation needs and mobility between the "young" elderly (ages 65-75) and "old" elderly (over age 75), while Cvitkovich and Wister (2001) emphasized the difference in needs between transportation-

dependent and transportation-independent seniors. Current studies suggest that additional research must occur in order to fully understand the diversity of that older adults, to meet the specific needs of this population and to provide older adult-friendly transportation options (Cvitkovich and Wister, 2001; Alsnih and Hensher, 2003). These studies and findings illustrate the complexity the issues surrounding older adult transportation.

One complex issue that has emerged in the last sixty years is increasing suburbanization and a trend toward aging at home. The desire to age at home, also known as aging-in-place, exacerbates the difficulties in providing effective public transportation (McNulty, 2005). Due to the increase in suburbanization, people are increasingly dependent on their cars. Car dependent suburban and rural areas are largely populated by the aging baby boomer generation (Bailey, 2004). Aging-in-place in widespread communities requires either the use of a car or very effective public transportation. Car dependence for older adults is not always realistic because not all older adults are able to or want to drive. Many older adults have grown accustomed to driving a private vehicle, raising the issue of learned behavior as a barrier to transit use. Currently there is little research on learned behavior among older adults in regard to transportation. Understanding trends among those who have and have not taken transit when younger, and comparing this information to the current transit habits of older adults would inform research and assist agencies in planning age groups to target for public transit education.

In regard to older drivers, numerous studies have documented the correlation between old age and the increased danger of motor vehicle crashes. Cerrelli's (1998) analysis of the 1996 National Personal Transportation Study data showed the highest crash rates to be among teens and older adults. Similarly, Khattak *et al*. (2002) revealed that factors contributing to collisions among older adults include driver attributes (e.g. age, health, and behavior), policies (e.g. speed limit and enforcement), vehicle and road characteristics, as well as environmental and temporal factors. Lotfipour, Conley, & Vaca (2006) take the additional step of emphasizing the higher risk of medical complications due to increased physical fragility among older adults who are involved in driving accidents. In addition, older adult drivers may be constrained by a numerous impairments, from poor eyesight (Ragland *et al*. 2004) and delayed reflexes due to the onset of dementia (which either decreases their likelihood of driving or increases their likelihood of being involved in accidents) (e.g. Fitten *et al*. 1995; Lundberg *et al*. 2003; Richardson & Marottoli 2003).

Although many older adults continue to use private cars as the predominant mode of transportation, many also rely on public or alternative modes of transportation. Public transportation is a vital source of mobility for older adults who do not drive (Rosenbloom, 2003; Houser, 2005), ensuring access to medical/health and social needs (Cvitkovich and Wister, 2001). Waller (1998) states that transportation is an essential component of how we live and what we do with our lives. In her discussion, transportation is more than a commodity; it is a social right which society has a duty to provide to ensure access goods and services for productive living. There is a growing need for improvements in public transportation systems to meet the needs of the aging urban, suburban, and rural populations.

The US GAO (2004) has identified two types of transportation: that which is necessary for medical and health needs and that which is life-enhancing, for social and recreational activities. Bailey (2004) identified that older adult non-drivers make 15% fewer trips to the doctor and 65% fewer social trips than older adult drivers. Strategies and interventions must be specifically developed to meet the current and anticipated transportation medical and social needs of this population are beneficial to reducing the risk of health consequences (such as lack

of preventative care and depression) from fewer medical and social trips. Transportation promotes quality of life and increases life satisfaction by providing access to social and other activities (Cutler, 1975). It has been shown that older persons who are primarily dependent on public transportation (versus private vehicle use) do not receive the same amount of medical and health care and have high rates of social isolation (Rittner and Kirk, 1995; Harrison and Ragland, 2003). Older adults who maintain active lifestyles are healthier and live longer than their transportation -disadvantaged counterparts who tend to suffer from depression and isolation (Sen and Suen, 2004). Staying active and mobile allows people to engage with their social and physical environments, helping reduce social isolation and improve quality of life.

When developing transportation plans, authorities will benefit from taking special care to address the characteristics of this population such as physical limitations, gender, race, and economic status (Alsnih and Hensher, 2003). Considerations of these kind are likely to increase transit appeal for many populations. Additionally, modifications made for persons with disabilities and older adults are likely to increase ease of public transit use for all populations. In times of scarce resources (especially for public transit), and with the knowledge of how important transportation is to the well-being of the older adult population, it is important to target transportation resources that consider the environmental and physical factors that are specific to the well-being of this population (Cvikovich and Wister, 2001).

Recent studies have begun to address the issue of "barriers" to transit use. Among the first studies to analyze barriers to seniors' use of public transit was Patterson's (1985), which concluded that "barriers" were both psychological (e.g. fear of crime) and physical ones (e.g., problems with accessing bus schedules and bus stops). Later, Rosenbloom (1988) concluded that physical and environmental barriers such as poor route planning or inconvenient bus stops played a larger role in limiting senior transit use than biological barriers such as old age or illness. Lavery (1996) proposed the "travel chain" idea, in which personal barriers (e.g. old age, illness) and vehicular barriers are exacerbated by "built environment barriers" such as poor street paving, confusing block patterns or, in the case of public transit, poor and inadequate routes, schedules, and signage.

The most current research builds on the physical barriers concept and begins to assemble not only a list of barriers to senior use of public transit but also provide direct recommendations for addressing barriers and increasing ridership among older adults. Ritter, Stowell, and Evans's *Understanding Senior Transportation: Report and Analysis of a Survey of Consumers Age 50+* (2002) presented to the AARP Public Policy Institute includes the most current and detailed examination of the transportation habits of older adults in America. Through a national telephone survey of American seniors, the study revealed that for most seniors, driving is still the most popular mode of transportation, with one-quarter of those surveyed citing difficulties associated with public transportation as reasons for avoiding it. Although the study offered recommendations to increase older adult ridership, it did not test the likely effects or outcomes of such recommendations, thus limiting their applicability.

A more comprehensive study is Burkhardt, McGavock, and Nelson's *Improving Public Transit Options for Older Persons* (TCRP Report 82, 2002), a handbook compiled for the Transit Cooperative Research Program. This handbook analyzed aging trends, older adult mobility needs, and older adult public transit concerns to develop detailed policy recommendations for both increasing older adult transit use and improving older adults' experience of public transportation. Taking the methodological analysis one step further, this study incorporated outside case studies to support its recommendations to improve public transit services and make

public transit a more attractive option for older adults. Further research of this depth could be beneficial to understanding public transportation barriers and concerns from an older adult perspective. Easter Seals Project ACTION (2006) describes in detail the difference between the Americans with Disabilities Act (ADA) minimum requirements to allow persons with disabilities to have access to the built environment, as opposed to universal design, which more of a "best practices" approach to designing accessible features that are good for people of all ages and mobility levels.

Public Transportation Barriers and Concerns for Older Adults:

Rogers *et al*. (1998) conducted a detailed focus group analysis of older adults in Atlanta and found that most seniors described immediate physical barriers as a major constraint to using public transit. These included difficulty getting on and off the buses and confusion over complicated signs and schedules. Using public transportation can be difficult for older adults, and particularly those with disabilities. Physical or psychological factors may predispose seniors against using public transportation (Sen and Suen, 2004). High on the list of seniors' concerns are accessibility and crime. Iseki Liggett, Loukaitou-Sideris, and Iseki (2001) discuss how elements of the built environment at bus stops can either encourage or discourage crime. Specifically regarding older adults, the AARP (2002) reports inadequate routes, fear of victimization during trips and difficulty boarding among seniors' top concerns. Similarly, Rosenbloom's report (2003) to the Center on Urban and Metropolitan Policy called on transit agencies to enhance communication and information and provide solutions such as low-floor busses to address some of the physical barriers. A recurrent theme among older adults is that barriers to accessing transit stations and bus stops impede transit use. The Easter Seals Project ACTION (2006) has developed three principles for accessible bus stop design as well as a toolkit for transit agencies to conduct bus stop inventories and evaluations. The three principles are as follows: (1) Barrier-Free Design: includes designing bus stops so that persons with disabilities can fully access them, including eliminating obstacles and providing slip-resistant surfaces; (2) Urban Wayfinding: is the process of movement from one location to another, and this activity requires continuity with the physical environment such as unbroken travel paths and visual cues of location and destination, and (3) Safety and Warning: similar to all roadway design and transit operations this category includes elements such as adequate lighting, street furniture, and notification of existing hazards with signs etc. Moreover, removing physical barriers to public transportation will benefit everyone, not just older adults (TCRP Report 82, 2002; McNulty, 2005).

Barriers to public transportation for older adults can be grouped into five categories: environmental, information and education, personal, policy and planning, and technology. Descriptions and explanations of these five categories are given below and include barriers and examples of potential solutions. *(A complete list of solutions is available in the attached matrix.)*

Environmental barriers:

These occur in the physical or built environment and are outside the scope of an individual's control. Following are some specific environmental barriers that have been shown to limit older adult's mobility:

Waiting outdoors in uncomfortable station areas for long periods: Older adults find are challenged when they wait for long periods of time at bus stops and stations (TCRP Report 82,

2002). Bus stops or transit stations may lack benches, resting areas, shelters, and accessible information. Dim or overly-lit stops and stations cause discomfort, increased fear, and a sense of victimization.

Solutions include improving the physical bus stop or station (installing shelters, better lighting, and transit signage) or increasing natural surveillance by (re)locating bus stops so that they are visible from surrounding establishments. Also useful are intelligent transportation systems with Automated Vehicle Locator (AVL) systems for real-time bus location via the internet access so riders can time exactly when a bus will arrive at their stop. Additionally, displays at bus stops which tell passengers when the bus is coming, such as *NextBus* systems, are useful so passengers know when the bus will be arriving (Easter Seals Project ACTION, 2006; TCRP Report 82, 2002).

Lack of security, and actual crime: Seniors have overriding concerns for personal safety at bus stops and on board buses (Patterson, 1985; Liggett, Loukaitou-Sideris, and Iseki, 2001; Sen and Suen, 2004). Security and fear of crime are consistent barriers for seniors using public transportation.

Addressing these barriers is the responsibility of both the transit agency and the municipality with jurisdiction for the area in which bus stops are located. Improvements in the design of bus can address physical elements to help increase security (Easter Seals Project ACTION, 2006). For example, lighting may be improved or natural surveillance increased by (re)locating bus stops so that they are visible from surrounding establishments (Liggett, Loukaitou-Sideris, and Iseki, 2001). Municipalities can improve lighting, increase law enforcement patrol, and improve characteristics of the built environment (such as having bus stations in visible areas) around the stop or station (Patterson, 1985).

Inconvenient, unsafe pedestrian approach to stops: Long distances to bus stops and lack of easy and safe pedestrian access to stops via sidewalks and crosswalks can also deter use of public transportation (MTC, 2002). Improving "safe routes to transit" is a priority for Bay Area residents, as evidenced by the 2004 voter-approved bridge toll increase to fund transportation projects (MTC, 2007). Providing adequate width and even surfacing of sidewalks is crucial, with ample separation from traffic, room for wheelchairs and walkers (Easter Seals Project ACTION, 2006). To this end, the UC Traffic Safety Center (under current contract with Caltrans), has been conducting pedestrian and bicycle safety assessments along the San Pablo corridor in the East Bay. At several of the high risk intersections (determined by crash analysis and observations), researchers noted a lack of congruity between the location of crosswalks and bus stops.

Possible solutions include improving pedestrian routes, increasing visibility of crosswalks, providing longer walk phases for pedestrians, moving stops that are near vacant lots to more populated areas (Houser, 2005), promoting mixed-use accessibility with sidewalk texture and width and providing curb ramps so as to promote "walkable," safe and accessible pedestrian approaches to stops and stations (Lavery *et al*., 1996; NAAAA, 2007).

Vehicle accessibility and limitations: Vehicle design can be improved to accommodate the needs of older adults and others with disabilities and mobility limitations. Difficulties with boarding or de-boarding transit vehicles, stop request systems, and inadequate seating can all serve as barriers (Laverty *et al*., 1996; Rosenbloom, 2003). Difficulty boarding and declining health status both make public transportation less desirable for people as their age increases (Ritter *et al*., 2002). Designing public transportation that is accessible for older adults and disabled persons is necessary in order to meet the mobility needs of these populations (Stait and Mitchell, 1991).

Removing physical barriers to riding public transportation can increase ridership among older adults. Improvements include the utilization of lower or kneeling buses to enable easier access while getting on/off the busses, providing systemized audio and visual announcements of vehicle stops, accessible stop request systems, handrails along doorways, and ensuring adequate seating for older adults (Mitchell and Stait, 1991; Laverty *et al*., 1996; TCRP Report 82, 2002; Rosenbloom, 2003).

Information and Education Barriers:

Another major barrier to accessing public transportation is a lack of education or knowledge about transit systems (TCRP Report 82, 2002). Education can be a powerful tool, both in teaching potential riders how to successfully ride public transit and for training transit staff to consider the needs of older adult transit riders (Drost and Smith, n.d.).

Lack of information about schedules and routes, perception of inconvenience, and unreliable service: Lack of information regarding public transportation contributes to a perception of inconvenience. Many seniors who have been lifelong drivers lack the knowledge or confidence to use public transportation (Sen and Suen, 2004). Lack of information about schedules and timing has been shown in surveys to be a cause for dissatisfaction with transit use (TCRP Report 82, 2002). Route and timetable information need to be made available at bus stops and stations, and should be maintained and updated as needed (Easter Seals Project ACTION, 2006). Seniors prefer to travel in off-peak periods when routes are limited (Sen and Suen, 2004). Rural and suburban areas, in particular, lack or have limited transit service and require transfers between transit operators. Such trips can be confusing and difficult to plan (Sen and Suen, 2004).

Potential improvements include Automated Vehicle Locator (AVL) technology, improved maps and schedules (more accurate and larger print), travel training, mobility management, and social marketing/outreach (TCRP Report 82, 2002; Freund, K., 2004).

Lack of training for bus drivers to better understand and meet the needs of senior riders: In addition to physical barriers, psychological barriers are significant. Older adults accustomed to the independence and flexibility of private automobiles use will have high expectations for transit (Center for Transportation Studies, 2001). Leading transit reports (Koffman and Salstrom, 2001; TCRP Report 82, 2002) have emphasized the importance that older adults place on customer service. The importance of service is underscored by national survey data that indicate that only 14% of all adults over the age of 69 have some difficulty using public transportation or cannot use it due to an impairment or health problem. This indicates that physical impairment is not a major factor in seniors' non-use of public transit. Additionally, about 45% of those who

cannot drive due to an impairment or health problem are capable of using public transportation (National Center for Health Statistics, 1998). Since older adults who use public transportation are likely to have decreased physical health and mobility, driver assistance may be a beneficial service while riding transit. Transit drivers have an important role to play in seniors' physical abilities and level of satisfaction with transit (MTI, 2001).

Transit drivers can make transit use less traumatic for seniors by being friendly and patient. Examples of training components may include instructing drivers on how best to listen and respond to older adults in a range of circumstances, what sorts of information they may need, how to use lifts, and the best way to assist seniors alighting the bus, carrying packages, and paying fares (TCRP Report 82, 2002).

Personal Barriers:

Personal barriers consist of issues such as physical limitations, perceptions, and psychological barriers to accessing public transportation. Physical needs of older adults can be addressed in the physical design of the transportation vehicles, bus stops and pathways to transit (*as discussed in the section on environmental barriers*). Perception of crime is illustrated here as a personal barrier, regardless if the crime is real or perceived. Psychological barriers to public transportation are more difficult to address and it require sensitivity and planning from transit agencies. Individual barriers are the most difficult to address through strategic intervention (Lavery *et al*. 1996). However, there are ways to accommodate an individual's physical needs and/or assist people in overcoming emotional and psychological barriers.

Physical limitations to accessing public transportation:

There is a wide range of physical limitations older adults may experience that can limit transportation accessibility, such as arthritis and hearing and vision impairments (Fildes and Oxley, 2004).

Physical limitations can be accommodated by a variety of services, including supplying accessible buses and vehicles (preferably per ADA standards) such as low floor buses, designated seating, and handrails (Patterson, 1985). Visual displays of stop request and location can be useful for the hearing impaired. Audio announcements and brail signage are beneficial to those with vision impairments (TCRP, 2002).

Perceived crime and lack of security (also discussed under environmental barriers):

Perceived crime and fear of public transportation are significant barriers for older adults. Older adults fear waiting at bus stops or station, being on crowded buses and potential crime. (Liggett, Loukaitou-Sideris, and Iseki, 2001; Patterson, 1985; Sen and Suen, 2004).

Interventions can include training and education of older adults on how to be safe while using public transportation. Additionally, transit agencies can implement improvements that address physical elements of security; e.g., improving lighting or increasing natural surveillance by (re)locating bus stops so that they are visible from surrounding establishments (Liggett, Loukaitou-Sideris, and Iseki, 2001). Municipalities can improve lighting, increase law enforcement, and enhance accessible characteristics of the built environment around the stop or

station (Patterson, 1985). These improvements may contribute to an older adult's sense of security while they wait for transit and while on the transit system.

Psychological barriers to accessing public transportation:
Psychological barriers for older adults accessing public transportation include the fear of loss of independence, and being stranded and isolated at home if they no longer drive. The level of emotional attachment to a car dependent lifestyle is very strong for the present and future older adult population. Culturally, there is a perception that cars represent independence, mobility, and freedom (Marottoli, 2005). The fear of losing one's independence and being stranded without transportation is very strong in adults over 65, as shown by the American Public Transportation Association (APTA, 2005), which found that 82% of adults 65 and over have a fear of being stranded without transportation after they can no longer drive.

Strategies to offset emotional barriers can include transit services such as "guaranteed ride home" service, flexible transit service beyond "fixed-routes", provision of trip planning assistance, outreach to older adults including services such as "bus buddies," and education, including travel training (TCRP Report 82, 2002).

Policy and Planning Barriers:
Policy and planning barriers are barriers to using public transit that can be modified by strategic planning. These include flexibility of transportation services, cost of public transportation, and systemized partnerships with local agencies and organizations.

Flexibility of transportation services: Fixed route public transportation services are a pervasive system of transit. However, this type of service is not always the most user-friendly or convenient for older adults. Older adults benefit from mixed-use flexible transportation which can meet a variety of mobility and geographical needs (Poister, 1982, TCRP Report 82, 2002).

Fixed route transit can be modified to better meet the needs of older adults by having increased frequency, longer service hours, increased routes, increased stops and strategic placement of bus stops. Flexible services can include paratransit, door-to-door services, taxi vouchers, and on call/same day scheduling of transportation (TCRP Report 82, 2002).

Cost of transportation services: Cost of transportation is an additional factor. Despite older adults' increasing incomes, they tend to live on less money than their younger counterparts. Many older adults have limited incomes, a factor which complicates the service needs for elder-appropriate transportation (TCRP Report 82, 2002; Houser, 2005).

Public transportation should be affordable for older adults, especially those who can no longer drive and are dependent on it for their travel needs. Strategies for reducing cost barriers include reduced rates for older adults, the involvement of transit agencies to provide transportation financial support, and subsidies or co-payments from governments, businesses, and individuals (TCRP Report 82, 2002). In the long run, funds should be secured for financially stable public transit (Cvitkovich and Wister, 2001).

Partnerships with local agencies and organizations: Lack of information (also identified as an educational barrier) and service coordination are prominent factors in older adults non-use of public transportation. Older adults need information about available services, while they can still drive as well as after driving cessation. Advanced planning and partnerships with transit and other agencies can reduce trauma associated with driving cessation. Transit agencies and local organizations can assist one another by providing a high level of service when preparing and encouraging older adults to use public transportation. Transit agencies can benefit from the relationships between local agencies and organizations and older adults in the community. Additionally, a lack of partnership and coordination of services *between* transit agencies can create gaps in the travel paths for older adults, resulting fragmented transportation, which is also a barrier (Drost and Smith, n.d.).

Partnership and coordination strategies include social marketing of services, customer travel training, training for transit drivers, travel assistance, information availability and referral, and mobility management services. Transit agencies can partner with other transit services providers to obtain coordination of services and seamless transit paths for older adults (Drost and Smith, n.d., TCRP Report 82, 2002). Networks of volunteers which provide individuals with private rides can be established and utilized to complement or subsidize existing transportation systems (TCRP Report 82, 2002; Freund, 2004; Houser, 2005).

Technological Barriers:
Technological barriers are barriers that are based in the utilization of improper technology or a lack of up-to-date technology that can benefit riders. Transit riders benefit when innovative technology is implemented and used (Waller, 1998). Innovative technologies that incorporate accessibility, information and safety especially benefit older adults and are extremely important in ensuring ridership growth and maintaining ridership.

Utilization of advanced technology: Many persons with physical impairments can benefit from advanced technologies that are available for transportation services. Suggested improvements are similar to those under environmental barriers.

Vehicles and transit paths that incorporate advanced technology should be used to ensure barrier-free design for older adults. Vehicle service improvements can include purchasing low floor vehicles, availability of audio and visual announcements, and utilization of AVL technology (TCRP Report 82, 2002). Automated Docking Systems to ensure proper distance from the curb and illuminated bus stop systems to notify buses that there are passengers waiting at a stop are two barrier-reducing technologies discussed by Easter Seals Project ACTION (2006). Other barrier-free design technologies include longer walk phases for pedestrians, traffic-calming measures, and improved intersections (Houser, 2005).

Government Attention to Public Transportation for Older Adults:

There is a growing consensus that governments should target public transportation as the primary, and potentially safer, alternative to older adult car use (Stunkel, 1997; Transit Cooperative Research Program, 1999; Cobb and Coughlin, 2000; Rosenbloom, 2003; Bailey, 2004; Koffman *et al*., 2004; US GAO, 2004). Rosenbloom and Morris's (1998) study on Australian and European seniors revealed that older people in these regions appear to choose the

best or most convenient mode for each trip regardless of car ownership. The research implication is that governments can strategically structure public transit and other services to reduce car use among older adults.

Government involvement in public transportation for older adults is a critical component in ensuring effective transportation. Both the Bailey (2006) and Koffman (2004) studies, respectively, arrive at similar conclusions about the role of government in impacting the American senior population's transit habits. Bailey's report (2006) to the Surface Transportation Policy Project summarizes the statistics on aging trends and older adult mobility habits and details the impact that the lack of adequate public transportation had on various older adult age groups by ethnicity, home geographical region, and other important factors. Cvitkovich and Wister (2001) address the fact transportation has not been federally funded at the same level as other important services for seniors. The allocation of resources for older adults needs to be re-visited in for seniors to maintain positive well-being. Koffman's report (2004) to the AARP Public Policy Institute discusses the legislative actions groups can take to enhance the use of various public transit modes.

Further exploration into the option of non-fixed route transportation is a possibility that may be the best choice for older adults in the future (Poister, 1982; TCRP Report 82, 2002). As mentioned earlier, older adults of the future will have different transportation needs than older adults of today. Future older adults will be more accustomed to the car culture and expect door-to-door services. Innovative transportation will be needed to accommodate the demands and needs of this population.

Policy Implications:

No policy on improving older adult public transit can succeed without taking older adult concerns into consideration (Rittner & Kirk, 1995; Stunkel, 1997; Ritter *et al*., 2002; Freund, 2004; Sen and Suen, 2004; US GAO, 2004). This includes finding the balance between public transportation being both affordable and cost-effective, and addressing concerns of crime and safety (e.g. Poister, 1982; Ritter *et al*., 2002). Research has begun on older adult mobility and transportation use, and further research needs to be done on the specific transportation needs of older adults and what works best for this population and subsequent generations.

The utilization rate of public transportation for older adults is likely to increase with the increase in numbers of older adults. Rosenbloom (2003) suggests that public transportation be made more inviting to the diverse needs of older adults to increase ridership and meet the needs of this population. Rosenbloom goes on to suggest four categories for public transit developments; (i) improving conventional service, (ii) increasing safety and security in all parts of the system, (iii) enhancing communication and information, and (iv) providing additional services more carefully targeted to older adults. Similarly, the Beverly Foundation in partnership with the American Automobile Association (AAA) Foundation for Traffic Safety (2004) has identified the "5 A's" of transportation for older adults: *availability* – service provided to places seniors want to go, when they want to go; *accessibility* – vehicle and pedestrian accessibility such as door-to-door travel; *acceptability* – friendly, safe clean service; *affordability* - cost is reasonable and subsidies available; *adaptability* – flexible service to accommodate various trip types, equipment and mobility needs. These recommendations suggest that the transportation needs of future older adults will be greater and that this population will demand increasing flexibility in their transit options.

The US GAO (2004) found that experts and advocacy groups suggest that the federal government evaluate the impact of transportation systems on older adult mobility. Policies that address coordination of services can also be effective in improving public transportation services (Cobb and Coughlin, 2000; US GAO, 2004; Koffman, 2004). Transportation policies suggested by Freund (2004) and the US GAO (2004) include leveraging of funding through volunteer drivers, increasing funding and funding flexibility, and providing advancements in information technology. In addition to government action, there is a parallel discussion regarding individual responsibility and planning for transportation (Cobb and Coughlin, 2000; US GAO, 2004; Koffman, 2004).

Next Steps:

As illustrated in this discussion, the future transportation needs of older adults are likely to be very different than those of the older adults of today. The coming generation of older adults is likely to be overall wealthier, have longer mobility experiences and higher standards for what "transportation" means (Cobb and Coughlin, 2000; Rosenbloom, 2003). Transportation should respond to and reflect the needs of the new generations of older adults, their varied mobility needs, and provide mixed-use transportation options.

For many seniors to stop driving can be detrimental to their continued mobility. Harrison and Ragland (2003) made a comprehensive study of the impact of driving cessation on the lives of older adults. They found that, overall, older adults who stopped driving had reduced rates of social interaction and decreased satisfaction in their life activities. These findings support the body of research on limitations on the daily activities of older adults due to inadequate transportation (Cutler 1975; Yassuda, *et al*. 1997; Rogers *et al*. 1998; Taylor and Tripodes 2001). Cutler (1975) articulates that transportation affects quality of life. Transportation for older adults is needed in order for them to participate in the activities of daily living. Grimm (2005) suggests that much more research needs to be done to fully understand the connection between mobility, health, and quality of life.

Richardson & Marottoli (2003) suggest that the link between older adults' poor driving habits and transportation planning interventions is a public health concern. Transportation needs must be addressed to help those who no longer drive to remain mobile. Public transportation planners also need to address individual reasons for driving cessation. Issues of impaired health that cause driving cessation must be considered to understand the needs of the older adult transit rider. For example, if an older adult is no longer driving due to vision impairment, transportation alternatives should accommodate the varied vision abilities of their new customers.

Marottoli (2005) suggests that cars symbolize freedom, independence, mobility, and personal control. Transportation planning and policies must address the emotional attachment future older adults will have to their cars and simultaneously promote the use of public transportation. Transportation strategies need to explore the options for safe mobility in older adults while incorporating the needs, desires, and fears that older adults have for alternative transportation. More research needs to be done on the emotional attachments of older adults to their preferred modes of transit. This research will assist transportation planners, the government, and policy makers to fully understand the root causes and reasons for preferred mode of transit. This research can help inform social marketing plans and other efforts, making transportation transitions effective in meeting the needs of this population.

Although some studies are beginning to investigate the individual's responsibility for transportation planning and financing (e.g. Cobb and Coughlin, 2000; Freund, 2004; GAO, 2004;

Koffman, 2004), it is debatable whether transportation is the responsibility of the individual or the government. Regardless, both individuals and governments have a role to play in transportation planning. Individuals must assess and state their personal needs, while governments must assist individuals and families with their transportation planning. Policies and programs need to be established to ensure that there is a variety of transportation options for older adults to choose from. These transportation plans and policies must take into account the diversity of the aging population, including socio-economic background, race, gender, locale, and individual needs.

One option that is gaining popularity is the development of "livable communities". Livable communities and "complete" streets are developments incorporating mixed-use and accessible modes of travel. This type of community is developed with proximity and accessibility in mind, enabling people to walk to their frequented destinations with accessible paths to transit and retail, and providing easy access to transportation for longer-distance travel. By creating livable communities,walking is promoted to improve the health and mobility of older adults, helping them experience increased independent mobility. Walking as a mode of transportation is critical for older adults when other transportation options are limited (Bailey, 2004). In order to have a truly livable community, Schwartz (1991) promotes a "barrier free design" which is accessible for everyone. This community design would ensure that there are barrier-free transportation paths included in all planning efforts, in all towns and cities.

Flexible (non-fixed route) public transportation is also becoming increasingly popular. Due to the cultural attachment to the private automobile, public transportation will have to design flexible services modeled after the private automobile standard. More research needs to be done in order to fully understand the complexities of the adult population in terms of their needs for flexible transportation. Their future mobility needs and requirements must be better understood in order to ensure proper planning, funding allocations and policy (Alsnih and Hensher, 2003)

Our research acknowledges that looking exclusively at the barriers to public transportation at bus stops and stations represents an important, but limited, dimension of older adults' transportation needs. To obtain a fuller picture of their mobility needs, habits and attitudes, further beneficial research should include:

- Strategies and interventions to address real or perceived issues of crime on public transit
- Effective educational interventions and outreach to encourage public transit ridership
- Cultural attachments to a car-dependent lifestyle, and how these changing with the new wave of older adults
- Changing the current transportation policy orientation to align with sustainable environmental principles and individual transit needs
- Creating increasingly "flexible" transit options
- An increased knowledge of transit needs for varied mobility levels
- How older adults use various types of transportation to meet their mobility needs

This further research would help create a more comprehensive view of transit needs for older adults that would serve as a tool for professionals preparing for the surge of baby boomers entering old age.

Improving transit access for older adults will benefit entire communities (TCRP Report 82, 2002; McNulty, 2005). Livable communities that promote walking and flexible non-private

forms of transportation for older adults can benefit everyone. If we ensure that paths to transit are accessible for all mobility levels and are designed with the needs of older adults in mind, public transportation will become increasingly accessible for all. Improving systems, stops and stations for older adults can in turn reduce barriers for all current and potential transit users.

In light of this research on older adult mobility and transit needs, it is critical consider the transit needs and habits of people from every age group. Persons who are familiar with public transit are arguably more likely to ride public transit throughout their lives, and into their elder years. Similarly, those who never or infrequently ride public transit are likely to not change their transit habits solely due to increasing age. This raises two important issues. First, some older adults may have a difficult time adjusting to new transit habits and learning new skills and systems based on life-long transit habits. Public transit systems must therefore be sensitive to older adults and their changing transit needs. Second, a wide array of transit options benefits everyone. People of all ages should have access to, be skilled at using and be able to actively utilize forms of transit other than the private automobile. Greater transit flexibility and increased knowledge will better prepare people of all ages to use their transit systems. These changes will also contribute to building environmentally-sustainable transit systems for the future.

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Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

What is the Matrix?

The matrix is designed to be a tool for transportation agencies and planning professionals in efforts to increase public transportation ridership for older adults. Barriers older adults encounter when utilizing public transit are addressed along with design and social marketing solutions. The implementation strategies are identified within a level of implementation: short-term, medium-term, and long-term.

Levels of implementation:

Three levels of implementation have been identified: Short-term, Medium-term, and Long-term. These levels have been developed to provide users of this matrix with an idea of the degree of implementation difficulty. These three levels may vary for individual agencies and transit authorities. The three identified levels are not meant to be a comprehensive implementation strategy, but rather, a rough guesstimate of short-term, medium-term, and long-term improvements.

Short-term:

The short-term implementation refers to interventions that can be accomplished in a very little amount of time and cost little to no money. Short-term implementations include interventions such as: building partnerships with other organizations, provide rider assistance services, ensure seating for older adults while on the bus, and service reliability (on-time service).

Medium-term:

The medium-term implementation refers to interventions that may require some strategic planning as well as being slightly costly. Medium-term implementations include interventions such as: providing benches at bus stops for older adults to rest while they wait, re-locating bus stops to more visible locations, and improve maps and schedules for increased readability.

Long-term:

The long-term implementation refers to interventions that require long-term strategic planning, possibly in coordination with multiple other agencies and professionals. Long-term interventions also are likely to be very costly, and consist of infrastructural changes. Long-term implementations include interventions such as: improving pedestrian paths-to-transit, purchasing and providing low-floor busses, flexible service, and reducing cost/fares for older adults.

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

BARRIERS	POTENTIAL DESIGN IMPROVEMENTS AND SOCIAL MARKETING INTERVENTIONS	DEGREE OF IMPLEMENTATION (short / long term interventions)
ENVIRONMENTAL		
Waiting outdoors in uncomfortable areas for long periods of time	*Design improvements:* • improve bus stops or stations by providing accessible amenities such as bus shelters, improved lighting, and benches for resting (7, 17, 23) • increasing natural surveillance by (re)locating bus stops so that they are visible from surrounding establishments (7, 11) • provide Advanced Vehicle Locators (AVL) and Displays allowing consumers to look up exact time of arrival on the internet, as well as arrival time displays at the bus stops to consumers know how long the wait will be and potentially decrease wait times (3, 7, 23, 24) • increase service frequency to reduce wait times, as well as improving transfer services to create shorter waiting time for transfers (23) *Social Marketing:* (23) • advertise improvements made at bus stops and stations • advertise new bus locations in accessible areas • advertise AVL systems	Short, Medium, and Long-term
Lack of security, and actual and/or perceived crime	*Design improvements:* • increasing natural surveillance by (re)locating bus stops so that they are visible from surrounding establishments (to be performed in	Medium and Long-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

	partnership by transit agencies and municipalities) (7, 11) • improved lighting for increased visibility around bus stations and stops to deter crime (17) • provide call boxes (7) • installation of emergency alarms at bus stops so consumers can activate the alarm in the event of danger (17) *Social Marketing:* • establish a buddy-system for riding the bus for both initial training and acclimation to public transit, as well as permanent services for those who prefer to ride with a "buddy" (23) • increase police protection and surveillance (17)	
Inconvenient/unsafe pedestrian approach to stops and stations	*Design improvements:* • improve pedestrians routes to ensure safe access to bus stops and stations (1, 5, 7, 9, 16, 23, 24) • install and maintain benches along the pedestrian routes for resting while approaching stops (especially for longer routes where older adults frequent) (7, 16, 18) • increase visibility of crosswalks and improve crosswalk lighting to ensure that older adult pedestrians are visible to oncoming traffic (7, 9, 13, 16) • provide longer walk phases and countdown signals for pedestrians to allow sufficient time for older adults to cross the street (5, 9, 13, 16) • provide pedestrian refuge islands on wide/busy streets, so older adults can rest if needed (5, 13) • move bus stops that are near vacant lots to more populated areas to increase visibility and will also provide naturally occurring surveillance (9, 11) • increase, improve, and maintain sidewalk availability, sidewalk texture, width and curb ramps for accessible and safe pedestrian	Medium and Long-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

	utilization (5, 6, 7, 10, 16, 18) *Social Marketing:* • develop transit path maps for riders with an emphasis on ADA accessible areas, streets, intersections and bus stops/stations • advertise improvements (23)	
Vehicle accessibility and limitations	*Design improvements:* • provide low floor or lift equipped buses to enable easier access while getting on/off busses (10, 15, 17, 20, 22, 24) • systemized audio and visual announcements of vehicle stops to assist passengers whom are hard of sight or hearing with their current location and approaching vehicle stops (3, 10, 23) • ensured seating available for older adults and transit operator enforcement of designated seating (3, 17, 23) • provide ramps for boarding or raised platforms at bus stops for easier access to getting on/off the bus (22, 23, 24) • provide passenger assistance from transit operator to older adult while getting on/off the vehicle, as well as assistance with packages or luggage that they may be carrying (3, 23) • provide handrails for easier access to getting on/off the bus (15, 17) • provide adequate leg room for passengers for comfort and allow for adequate space during crowded buses (15) • provide easily accessible stop request systems such as bell pushes in various locations throughout the bus (15) • improve maps and schedules for easy readability with large print and color coding to simplify information (5, 23, 24) • limit crowding on the bus around older adults by providing adequate space and seating (17) *Social Marketing:*	Short, Medium, and Long-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

	• advertise improvements (23) • rider testimonials on promotional materials	
INFORMATION and EDUCATION		
Lack of information about schedules and routes, perception of inconvenience; unreliable service	*Design improvements:* • provide Automatic Vehicle Locator (AVL) information systems for on-line access to real-time arrival times and bus stop displays of next vehicle arrival time (7, 23) • improve maps and schedules for easy older adult readability with large print and color coding to simplify information (5, 7, 23, 24) • conduct social marketing to advertise improvements made and available transit services (23) • ensure proper placement and availability of stations for easy older adult access (7, 19) • provide a telephone information line for information regarding scheduling, timetables, transfers, and trip planning assistance (19, 23) *Social Marketing:* • informational education on availability, options, and where to get more information (6, 23, 24) • travel training (6, 23, 24) • transit training before the onset of driving cessation, so older adults are more familiar at the time of driving cessation (14, 21, 23) • peer-based education (buddy system, mentors, site leaders, and educators) (6, 14, 23) • PSA on older adult radio stations, transit newsletter availability (23) • advertisements in local senior circulars (23) • ensure proper signage and readability of signs (i.e.: bus routes and	Short, Medium, and Long-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

	timetables at bus stop locations and on the bus) (5) • outreach (14, 23) • multi-lingual outreach efforts (24) • partnership with local AARP, DMV and physicians for education and outreach (23, 24) • partner with social service organizations (23)	
Lack of training for transit and bus drivers to better understand and meet the needs of senior riders	*Design improvements:* • integrate training for transit employees into routine employee training on the specific needs of older adults on public transportation (7, 14, 23, 24) • ensure consumer assistance by providing helpful drivers/driver assistance with location information, stop identification and requests, transfer information, getting on/off the bus, lifting carts, bags, and packages (3, 8, 17, 20, 23) *Social Marketing:* Customer Services training of transit and bus drivers (3, 23, 24) • how to interact with older adults in a manner that meets the needs of the older adult consumer • announce upcoming stops for older adults who are not familiar with public transportation, the location, or are not otherwise able to independently identify upcoming stops • ensure older adults are seated before departure so as to reduce probability of injury from movement of bus • request seating be made available for older adults • ensure older adult assistance (from stop/location information to getting on/off the bus) from driver when needed • assistance with fares, seating and boarding/dismounting	Short-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

PERSONAL		
Physical limitations • physical disability • hearing impairment • vision impairments	*Design improvements:* • provide low floor or lift equipped buses to enable easier access while getting on/off busses (10, 15, 17, 20, 22, 24) • systemized audio and visual announcements of vehicle stops to assist passengers whom are hard of sight or hearing with their current location and approaching vehicle stops (3, 10, 23) • ensured seating available for older adults and transit operator enforcement of designated seating (3, 17, 23) • provide ramps for boarding or raised platforms at bus stops for easier access to getting on/off the bus (22, 23, 24) • provide passenger assistance from transit operator to older adult while getting on/off the vehicle, as well as assistance with packages or luggage that they may be carrying (3, 23) • provide handrails for easier access to getting on/off the bus (15, 17) • provide adequate leg room for passengers for comfort and allow for adequate space during crowded buses (15) • provide easily accessible stop request systems such as bell pushes in various locations throughout the bus (15) • improve maps and schedules for easy readability with large print and color coding to simplify information (5, 23, 24) • limit crowding on the bus around older adults by providing adequate space and seating (17) • accessible busses and stops to accommodate physical needs (10, 17) • routinely clean windows for passenger visibility and to identify the current location of the vehicle (17, 24)	Short, Medium, and Long-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

	Social Marketing: • advertise improvements (23) • include rider testimonials on promotional materials to garner peer support and trust within the older adult community	
Perceived crime and lack of security *(similar as under environmental)*	*Design improvements:* • increasing natural surveillance by (re)locating bus stops so that they are visible from surrounding establishments (to be performed in partnership by transit agencies and municipalities) (7, 11) • improved lighting for increased visibility around bus stations and stops to deter crime (17) • installation of emergency alarms at bus stops so consumers can activate the alarm in the event of danger (17) *Social Marketing:* • establish a buddy-system for riding the bus (23) • police protection and surveillance (17)	Medium and Long-term
Psychological barriers • psychological/cognitive disorder • attachment to car • attachment to perceived independence • fear • concern with getting lost/going the wrong way	*Design improvements:* • services can include “guaranteed ride home” program, which allows consumers to obtain a free-of-charge voucher for a taxi or rental car in case of emergency or being stranded without your anticipated ride home, this may alleviate some anxiety about being stranded without being able to get home (12, 23) • provide flexible service beyond “fixed-routes” in order to pick seniors up where they are and drop them off where they need to go, and reduce walk and wait times while simultaneously alleviating concerns the consumer may have about not getting where they need to go (23) • overall cleanliness of the vehicle for consumer satisfaction (17)	Short, Medium, and Long-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

	Social Marketing: • advanced trip planning assistance (via telephone, internet, in-person, training, etc.) (23) • provide or promote a bus-buddy system (23) • promote individual experimentation with transportation alternatives (23) • promote a sense of control for the rider (17) • promote safety of transit service (17) • personal assistance with the transition from car to public transportation (12, 21) • welcome new public transportation users (3) • partner with social services organizations (23)	
POLICY and PLANNING		
Flexibility of transportation services	*Design improvements:* • increased frequency of bus vehicles to reduce wait times and increase availability (2, 23) • longer service hours to accommodate the needs of older adults and their preferred travel times (2, 23) • increased number of routes routed specifically where other routes do not go, and locations which are frequented by older adults (2, 23) • increased stops to reduce walking for older adults and strategic placement of bus stops near facilities and locals that older adults frequent (2, 23) • provide sufficient amounts of paratransit for older adults who utilize this services and promote the services for those who do not already utilize it (2, 23) • provide additional (to paratransit) door-to-door services for easy accessibility and travel for older adults (2, 23)	Short and Medium-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

	• provide Taxi services for older adults (2, 20, 23) • provide on call/same day scheduling of transportation for the spontaneous needs of older adults (2, 23) *Social Marketing:* • advertise improvements (23)	
Cost of transportation services	*Design improvements:* • reduced rates for older adults to accommodate for lower or fixed income individuals (23) • outside agencies (local organizations and non-profits) can provide transportation financial support by purchasing tickets or voucher for older adult riders (23) • subsidies or co-payments from governments, businesses and individuals to provide lower-cost public transit for older adults (23) • secure funds (public and private) for financially stable public transit through policy and outreach to funding sources such as foundations (4). *Social Marketing:* • advertise improvements (23)	Medium and Long-term
Partnerships with local agencies and organizations	*Design improvements:* • conduct social marketing of services to conduct outreach and increase ridership (6) • provide customer travel training to familiarize customers with transit services (2, 6, 23) • provide training for transit drivers to ensure the needs of older adults are being met while riding public transit (2, 6, 23) • provide travel assistance by transit operators for older adults who request such service (6, 23)	Short-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

	• availability of information and referrals must be accessible for older adults (such as partnerships with local organizations that currently serve older adults) (6, 23) • travel ambassadors and mentors to acclimate older adults to riding public transportation, as well as provide them with the necessary information and confidence needed to ride transit (6, 23) • provide mobility management services to assist older adults in their planning for their transportation needs as well as provide referrals to other transit agencies and agencies whom can assist with transportation needs of the individual (2, 23) • incorporate consumer feedback, because it is critical to service to understand the needs and requirements the older adult population poses to transit agencies (6) • coordination of services with other transit agencies is critical to ensure that there are minimal gaps in transit for older adults to reduce wait-times, trip time, and overall inconvenience of public transit (6, 23) • integrate volunteer networks and services into the coordination of services, volunteer services are likely to provide door-to-door transit for older adults in volunteer private automobiles (2, 8, 9, 20, 23) *Social Marketing:* • advertise improvements (23)	

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

TECHNOLOGY		
Utilization of advanced technology	*Design improvements:* • provide low floor or lift equipped buses to enable easier access while getting on/off busses (9, 23, 24) • systemized audio and visual announcements of vehicle stops to assist passengers whom are hard of sight or hearing with their current location and approaching vehicle stops (3, 7, 10, 23) • AVL technology (3, 7, 13, 24) • longer walk phases for pedestrians to ensure that older adults have sufficient time to cross the street (especially on wide and busy streets) (9, 23) • implement traffic-calming measures to reduce speed of cars to make it safer for older adults to walk about and cross the street (9) • improve intersections for multi-use transportation modes primarily walking for older adult pedestrians, pedestrian/car visibility, and sufficient walk phase timing for older adults mobility needs (9) *Social Marketing:* • advertise improvements (23)	Medium and Long-term

Matrix of Barriers that Older Adults are Faced with at Transit Stops in Urban and Suburban Settings

With Suggested Design Improvements and Social Marking Interventions

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Hello. The UC Berkeley Traffic Safety Center is conducting a survey today on the transit habits and public transit attitudes of older adults. We are not selling anything, and your responses will be CONFIDENTIAL. The survey is OPTIONAL but will only require about ten minutes if you choose to respond.

Please CIRCLE your answers. If the answer you give requires you to fill in a blank, please do so to the best of your ability.

1. On average, how many days a week do you go somewhere by using a car, public transportation, walking, etc.?

    1. 1 Day
    2. 2 Days
    3. 3 Days
    4. 4 Days
    5. 5 Days
    6. 6 Days
    7. 7 Days
    8. Less than 1 day a week

2. Of the days that you do go someplace, how often do you use…**(in the spaces provided, please write the number of days a week that you use each of the following forms of transportation)**

    1. A car, truck, or van _____ days a week
    2. A bus (e.g. AC Transit) _____ days a week
    3. A streetcar or trolley car _____ days a week
    4. BART _____ days a week
    5. A taxicab _____ days a week
    6. Walk _____ days a week
    7. Other
       (Please specify: _____) _____ days a week

3. For each of the following types of trips, please indicate with a check which type of transportation you use MOST OFTEN to take that trip.

Grocery Shopping	___car	___bus	___streetcar	___BART	___walk	___other
Mall Shopping	___car	___bus	___streetcar	___BART	___walk	___other
Going out / Entertainment	___car	___bus	___streetcar	___BART	___walk	___other
Going to the doctor / dentist	___car	___bus	___streetcar	___BART	___walk	___other
Visiting a friend or relative	___car	___bus	___streetcar	___BART	___walk	___other
Going to a senior center	___car	___bus	___streetcar	___BART	___walk	___other
Work	___car	___bus	___streetcar	___BART	___walk	___other
Other errands	___car	___bus	___streetcar	___BART	___walk	___other

4. If you use your car for the trips listed in question 3, who does the vehicle that you use belong to?

    1. It's my own and I drive myself to places.
    2. It's my own but my spouse, child, or friend uses it to drive me to places.
    3. It belongs to a child, relative, or friend and they drive me places.
    4. It belongs to a child, relative, or friend and I use it to drive myself to places.
    5. It is a part of senior home's shuttle system.
    6. Other (Please specify: _____)
    7. **I do not use a car, truck, or van.**

5. If you use a car, truck, or van, how many times DURING THE DAY the day do you use to run errands, go out to eat, or some other activity?

    1. Never
    2. Less than once a day (e.g. only 2 to 3 times a week)
    3. Once a day
    4. Twice a day
    5. 3 times a day
    6. 4 times a day
    7. 5 or more times a day
    8. **I do not use a car, truck, or van.**

6. About how long does it usually take you to get to the following places? **If you do not go to any of these places often or do not know, please DO NOT circle a response.**

	A Short Time	Not Too Short or Long	A Long Time
Senior Activity Center	1	2	3
Grocery Store	1	2	3
Mall	1	2	3
Restaurant	1	2	3
Doctor / Dentist	1	2	3
Work	1	2	3
Other Destination	1	2	3

(Please specify: _____)

People consider different factors when deciding whether to drive or use public transportation. Please decide whether each factor is NEVER IMPORTANT, SOMETIMES IMPORTANT, USUALLY IMPORTANT, or ALWAYS IMPORTANT to you.

In determining whether to drive or use public transportation, how important is…?

7. The cost of parking
   a. Never b. Sometimes c. Usually d. Always
8. The availability of parking
   a. Never b. Sometimes c. Usually d. Always
9. Traffic congestion
   a. Never b. Sometimes c. Usually d. Always
10. The cost of driving (gas, insurance, tolls, etc.)
    a. Never b. Sometimes c. Usually d. Always
11. Reliable arrival time at your destination
    a. Never b. Sometimes c. Usually d. Always
12. Convenience
    a. Never b. Sometimes c. Usually d. Always
13. The availability of transportation once at your destination
    a. Never b. Sometimes c. Usually d. Always
14. The travel time
    a. Never b. Sometimes c. Usually d. Always
15. Privacy
    a. Never b. Sometimes c. Usually d. Always
16. The cleanliness of the vehicle
    a. Never b. Sometimes c. Usually d. Always
17. The attitude of the driver / conductor
    a. Never b. Sometimes c. Usually d. Always
18. Personal safety
    a. Never b. Sometimes c. Usually d. Always
19. Flexibility
    a. Never b. Sometimes c. Usually d. Always

20. Which TWO of these do you consider the **MOST IMPORTANT** when deciding whether to use your own vehicle or not. **Please CIRCLE the TWO choices that apply.**

    1. The cost of parking
    2. The availability of parking
    3. The traffic congestion
    4. The cost of driving (gas, insurance, tolls, etc.)
    5. Reliable arrival time at your destination
    6. Convenience
    7. The availability of transportation once at your destination
    8. Travel time
    9. Privacy
    10. The appearance and cleanliness of the vehicle
    11. The appearance and attitude of the driver / conductor
    12. Personal safety
    13. Flexibility

The next several questions ask you specifically about public buses, such as AC Transit.

21. Do you think you have convenient access to buses near your home?

    1. Yes
    2. No

How much do you know about…

	A Lot	Little	Nothing
22. …the bus routes in your area?	1	2	3
23. …the bus fares in your area?	1	2	3
24. …the bus schedules in your area?	1	2	3

The following are some common statements about the local buses. For each one, please identify how much you agree with the statement using either NEVER, SOMETIMES, USUALLY, or ALWAYS.

25. Local buses are reliable overall.

    a. Never b. Sometimes c. Usually d. Always

26. Local buses come frequently.

    a. Never b. Sometimes c. Usually d. Always

27. Local buses are clean.

    a. Never b. Sometimes c. Usually d. Always

28. Local buses get me from one place to another quickly.

    a. Never b. Sometimes c. Usually d. Always

29. People who are my age use local buses.

    a. Never b. Sometimes c. Usually d. Always

30. My friends use local buses.

    a. Never b. Sometimes c. Usually d. Always

31. Local bus fares are inexpensive.

    a. Never b. Sometimes c. Usually d. Always

32. I feel safe riding on local buses.

    a. Never b. Sometimes c. Usually d. Always

33. Local bus drivers are friendly and polite.

    a. Never b. Sometimes c. Usually d. Always

34. The local bus system is considerate of senior citizen concerns.

    a. Never b. Sometimes c. Usually d. Always

35. I feel safe waiting at bus stops.

    a. Never b. Sometimes c. Usually d. Always

36. The schedules and route maps listed at bus stops are easy to understand.

    a. Never b. Sometimes c. Usually d. Always

37. I walk too long to get to a bus stop.

    a. Never b. Sometimes c. Usually d. Always

38. People have different reasons for not using the bus. Why don't you use the bus more often?

    Primary Reason: _____

    Other Reason: _____

39. Which of the following statements best describes your use of public buses? **(Choose ONE)**

    1. I DO NOT use the bus and will never use it under any circumstances.
    2. I DO NOT use the bus and will only use it if I had no other choices.
    3. I DO NOT use the bus BUT will consider using it under the right circumstances. **(please specify:** _____ _____**)**
    4. I DO use the bus but only occasionally.
    5. I DO use the bus all the time.
    6. I don't know

There are just a few more questions, just to gather a sense of your background. **If you choose not to answer any of the following questions, simply leave it blank.**

40. What is your current marital status?

    1. Now married
    2. Widowed
    3. Divorced
    4. Separated
    5. Never married
    6. Other **(Please Specify:** _____**)**

41. Including you, how many people live in your household? _____

42. How many members of your household have a driver's license? _____

43. Altogether, how many vehicles, including cars, vans, and trucks are available for use by members of your household? _____

44. What is your age? _____

45. What is the highest level of schooling you have completed?

    1. Less than high school
    2. High school graduate
    3. Some College
    4. 2-Year College Graduate / Vocational School Graduate
    5. 4-Year College Graduate
    6. Post-Graduate Degree

46. What is your main ethnic or racial heritage?

    1. Asian American, Indian or Pacific Islander
    2. Black / African American
    3. Hispanic or Latino
    4. Native American
    5. White / Caucasian
    6. Other or Mixed Heritage **(Please specify:_____)**

47. And what is your total annual family income, including retirement and / or Social Security benefits?

    1. Less than $10,000
    2. $10,000 to $19,999
    3. $20,000 to $29,999
    4. $30,000 to $39,999
    5. $40,000 to $49,999
    6. $50,000 to $59,999
    7. $60,000 to $69,999

8. Over $70,000

48. What is the zip code at your home address? _____

49. Gender

    1. Male
    2. Female

Hola. El Centro de estudios de seguridad del tráfico de la Universidad de California (Traffic Safety Center) hoy esta haciendo una encuesta en los hábitos de transito y las actitudes en el transporte publico a las personas mayor edad. Nosotros no estamos tratando de ver algo, y sus respuestas serán CONFIDENCIALES. Esta encuesta es OPCIONAL pero únicamente requerirá menos de diez minutos si desea responder.

Por favor CIRCULE sus respuestas. Si la respuesta requiere que llene un espacio blanco, por favor hágalo como mejor pueda.

1. ¿En promedio, cuantos días a la semana usted va ha un lugar en un carro, en transporte publico, caminando, etc.?

    1. 1 Día
    2. 2 Días
    3. 3 Días
    4. 4 Días
    5. 5 Días
    6. 6 Días
    7. 7 Días
    8. Menos de un día a la semana.

2. En los días en que usted va ha un lugar, cada cuando usted usa… **(en los espacios proveídos, por favor escriba el numero de días a la semana que usted usa cada uno de los siguientes medios de transporte)**

    1. Un automóvil, camioneta o van _____ Días a la semana
    2. Un autobús (*AC Transit* por ejemplo) _____ Días a la semana
    3. Un trole o tren de cable _____ Días a la semana
    4. BART _____ Días a la semana
    5. Un Taxi _____ Días a la semana
    6. Caminar _____ Días a la semana
    7. Otro
       (Por favor especifique: _____) _____ Días a la semana

3. Por cada uno de los siguientes tipos de viajes, por favor indique con una marca que tipo de transporte usted usa MAS FRECUENTE para hacer ese respectivo tipo de viaje.

Comprar mercado	___carro	___autobús	___tren de cable	___BART	___caminar	___otro
Ir al centro comercial	___carro	___autobús	___tren de cable	___BART	___caminar	___otro
Salir/Entretenimiento	___carro	___autobús	___tren de cable	___BART	___caminar	___otro
Visitar al doctor/dentista	___carro	___autobús	___tren de cable	___BART	___caminar	___otro
Visitar a un amigo/familiar	___carro	___autobús	___tren de cable	___BART	__caminar	___otro
Ir al centro de personas	___carro	___autobús	___tren de cable	___BART	__caminar	___otro
Trabajo	___carro	___autobús	___tren de cable	___BART	__caminar	___otro
Otras/Diligencias	___carro	___autobús	___tren de cable	___BART	__caminar	___otro

4. Si usted usa un carro para los viajes en la pregunta tres, ¿A quien le pertenece el vehículo?

    1. Es mi carro y yo lo manejo cuando lo uso.
    2. Es mi carro pero mi esposa, hijo/hija o amigo lo maneja cuando salgo.
    3. Es de mi hijo/hija, de un familiar o amigo y ellos lo manejan cuando salgo.
    4. Es de mi hijo/hija de un familiar o amigo pero yo lo manejo cuando salgo.
    5. Es parte del centro para personas mayores de donde vivo.
    6. Otro **(Por favor especifique**_____**)**
    7. **Yo no uso un carro, camioneta o van.**

5. Si usted usa un carro, camioneta o van, ¿Cuantas veces DURANTE EL DIA lo usa para hacer diligencias, salir a comer u otra actividad?

    1. Nunca
    2. Menos de una vez al día (ejemplo: Solo 2 o 3 vez a la semana)
    3. Una vez al día
    4. Dos veces en un día
    5. Tres veces al día
    6. Cuatro veces al día
    7. Cinco o mas veces al día
    8. **Yo no uso un carro, camioneta o van.**

6. ¿Como cuanto se demora usualmente para llegar a los siguientes lugares? **Si usted no va a unos de estos lugares frecuentemente o no sabe, por favor NO circule una respuesta**

	Un tiempo corto	Ni largo, ni corto	Un tiempo largo
Centro de actividades	1	2	3
Supermercado	1	2	3
Centro Comercial	1	2	3
Restaurante	1	2	3
Doctor / Dentista	1	2	3
Trabajo	1	2	3
Otro Destino	1	2	3

(Por favor especifique: _____)

Gente considera diferentes factores cuando deciden si van ha usar transporte publico o no. Por favor indique si cada factor es NUNCA IMPORTANTE, ALGUNAS VEZES IMPORTANTE, USUALMENTE IMPORTANTE o SIEMPRE IMPORTANTE para usted.

En determinando si va ha manejar o usar transporte publico, ¿Que importante es…?

7. El costo de parqueo
   a. Nunca b. Algunas veces c. Usualmente d. Siempre
8. La disponibilidad de parqueo
   a. Nunca b. Algunas veces c. Usualmente d. Siempre
9. Congestión de trafico
   a. Nunca b. Algunas veces c. Usualmente d. Siempre
10. El costo de manejar (gasolina, seguro, peajes, etc.)
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
11. Seguridad de llegar a su destino a tiempo
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
12. Conveniencia
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
13. Disponibilidad de transporte desde su destino
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
14. Tiempo de viaje
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
15. Privacidad
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
16. Limpieza del vehículo
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
17. Actitud del conductor del vehículo
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
18. Protección personal
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
19. Flexibilidad
    a. Nunca b. Algunas veces c. Usualmente d. Siempre

20. Cuales DOS de los siguientes factores usted considera los **MAS IMPORTANTES** cuando decide si va a usar su carro o no. **Por favor CIRCULE DOS opciones**

    1. El costo de parqueo
    2. La disponibilidad de parqueo
    3. Congestión de trafico
    4. El costo de manejar (gasolina, seguro, peajes, etc.)
    5. Seguridad de llegar a su destino a tiempo
    6. Conveniencia
    7. Disponibilidad de transporte desde su destino
    8. Tiempo de viaje
    9. Privacidad
    10. Limpieza del vehículo
    11. Actitud del conductor del vehículo
    12. Protección personal
    13. Flexibilidad

Las siguientes preguntas son especialmente acerca de los buses públicos como *AC Transit.*

21. ¿Usted cree tener acceso conveniente a los buses cerca a su casa?

    1. Si
    2. No

¿Usted cuanto conoce acerca de…

	Mucho	Poco	Nada
22. …Las rutas de autobuses en su área?	1	2	3
23. …Los tarifas de los autobuses es su área?	1	2	3
24. …La hora en que los autobuses pasan en su área?	1	2	3

Las siguientes son declaraciones comunes acerca de los autobuses locales. Por cada una, por favor identifique cuanto usted esta de acuerdo en ellas usando NUNCA, ALGUNAS VECES, USUALMENTE, SIEMPRE

25. En general, los autobuses locales son confiables.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
26. Los autobuses locales pasan frecuentemente.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
27. Los autobuses locales son limpios.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
28. Los autobuses locales me llevan de un lugar a otro rápidamente.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
29. Gente de mi edad usa los autobuses locales.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
30. Mi amigos usan autobuses locales.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
31. Los autobuses locales son baratos.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
32. Yo me siento seguro cuando uso los autobuses locales.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
33. Los conductores de los autobuses locales son amigables y corteses.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
34. El sistema de los autobuses locales tiene consideración con la gente mayor.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
35. Yo me siento seguro cuando espero el autobús.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
36. Las rutas y los horarios de cada bus son fáciles de entender.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre
37. Me toca esperar mucho para tomar un autobús.
    a. Nunca b. Algunas veces c. Usualmente d. Siempre

38. Gente tiene muchas razones por no usar el autobús. ¿Porque usted no usa el autobús mas frecuentemente?

    Razón mas importante:_____

    Otra razón: _____

39. ¿Cual de las siguientes declaraciones describe mejor su uso de los autobuses públicos? **(Escoja Uno)**

    1. Yo NO USO el autobús y nunca lo usare en bajo ninguna circunstancias
    2. Yo NO USO el autobús y lo usare solo si no tengo ninguna otra opción.
    3. Yo No USO el autobús PERO lo consideraría solo bajo las siguientes circunstancias **(Por favor especifique**_____

       _____**)**
    4. Yo USO el autobús pero solo ocasionalmente.
    5. Yo USO al autobús todo el tiempo.
    6. Yo no se.

Solo hay unas cuantas preguntas mas para tener una idea suya. **Si no desea contestar alguna de las siguientes preguntas, simplemente déjela en blanco.**

40. ¿Esta casado y viviendo con su esposo/esposa, o es viudo/viuda, divorciado, separado, nunca se ha casado?

    1. Casado
    2. Viudo
    3. Divorciado
    4. Separado
    5. Nunca Casado
    6. Otro **(Por favor Especifique: _____)**

41. ¿Incluyendo usted, cuantas personal viven en su hogar? _____

42. ¿Cuantos miembros de su hogar tienen licencia de manejo? _____

43. ¿Cuantos vehículos incluyendo caros, vans camionetas son disponibles para uso diario en los miembros de su hogar?
_____

44. ¿Cual es su edad? _____

45. ¿Cual es el máximo nivel de educación que ha tenido?

    1. Menos de Preparatoria
    2. Graduado de la Preparatoria
    3. Alguna Educación Avanzada
    4. Educación Técnica
    5. Graduado de Universidad
    6. Post-Grado

46. ¿Cual es su herencia étnica o racial?

    1. Asiático Americano, Indio o De las islas del Pacifico
    2. Moreno/ Africano Americano
    3. Hispano o Latino
    4. Nativo Americano
    5. Blanco/Anglosajón
    6. Otro o raza mixta **(Por favor especifique: _____)**

47. ¿Cuanto son sus ingresos anuales incluyendo pensiones y/o beneficios del Seguro Social?

    1. Menos de $10,000
    2. $10,000 a $19,999
    3. $20,000 a $29,999
    4. $30,000 a $39,999
    5. $40,000 a $49,999
    6. $50,000 a $59,999
    7. $60,000 a $69,999
    8. Mas de $70,000

48. ¿Cual es el código postal de su hogar? _____

49. ¿Sexo?

    1. Hombre
    2. Mujer

您好。UC Berkeley Traffic Safety Center (伯克萊加州大學交通安全研究中心) 正進行一份耆英人士對交通捷運系統之態度及感想的民意調查。我們不會推售任何商品，也**不會出售或透露您所提供的答案及個人資料**。您有權拒絕回答本調查的問題但調查只需要大約十分鍾。

在每個問題上，請圈上最合適您的答案。如果問題需要您填入空格，請寫出對您最合適的答案。

1. 您平均每個星期有多少天是使用私家車輛、公共捷運系統、或是步行上街？

    a. 每星期一天

    b. 每星期兩天

    c. 每星期三天

    d. 每星期四天

    e. 每星期五天

    f. 每星期六天

    g. 每星期七天

    h. 每星期一天以下

2. 您出外的那幾天，您每星期會使用以下不同的交通工具多少次？(請在空格裡寫出您每星期所用那種交通工具的次數)

    a. 私家汽車或其他的私家車輛　　每星期_____ 天

    b. 公共巴士（例如AC Transit）　　每星期_____ 天

    c. 輕鐵或纜車　　每星期_____ 天

d. 灣區快速捷運系統（BART）（“搭叭”） 每星期_____ 天

e. 計程車 / 的士 每星期_____ 天

f. 步行 每星期_____ 天

g. 其他

(請指出: _____) 每星期_____ 天

3. 請在以下不同的行程旁用一個勾（√）來顯示出您經使用的交通工具 **（在每個地點只能填一樣工具）**。

去超級市場 / 去買菜 ___私家車輛 ___公車 / 巴士 ___輕鐵 ___BART ___步行 ___其他

去購物商場或中心 ___私家車輛 ___公車 / 巴士 ___輕鐵 ___BART ___步行 ___其他

逛街 / 參加娛樂性節目___私家車輛 ___公車 / 巴士 ___輕鐵 ___BART ___步行 ___其他

去醫生 / 看牙醫 ___私家車輛 ___公車 / 巴士 ___輕鐵 ___BART ___步行 ___其他

探訪親朋好友 ___私家車輛 ___公車 / 巴士 ___輕鐵 ___BART ___步行 ___其他

去老人活動中心 ___私家車輛 ___公車 / 巴士 ___輕鐵 ___BART ___步行 ___其他

去上班 / 工作 ___私家車輛 ___公車 / 巴士 ___輕鐵 ___BART ___步行 ___其他

辦私人事 ___私家車輛 ___公車 / 巴士 ___輕鐵 ___BART ___步行 ___其他

4. 如果您在以上第三個問題上回答使用私家車輛，請回答車輛是屬於誰的？

a. 車輛是我的而且我是駕駛者。

b. 車輛是我的但我家屬或朋友是駕駛者（他們接送我到處去）。

c. 車輛是家屬或朋友的而他們是駕駛者（他們接送我到處去）

d. 車輛是我家屬或朋友的但我自己是駕駛者。

e. 車輛是屬於老人居住所或退休院的。

f. 其他 **(請指出:** _____**)**

g. **我不使用任何私家車輛。**

5. 如果您使用私家汽車，您每天會用車輛出外多少次？

   a. 不會用

   b. 每天一次以下（只是每星期兩、三次）

   c. 每天一次

   d. 每天兩次

   e. 每天三次

   f. 每天四次

   g. 每天五次以上

   h. **我不使用私家汽車**

6. 您去以下的地方大概需要多長時間？**如果您不經常來往以下某一個地方或不清楚，請不用回答。**

	較短時間	不短也不長	較長時間
老年人活動中心	1	2	3
超級市場 / 街市	1	2	3
購物商場	1	2	3
餐館 / 飯店	1	2	3
醫生或牙醫事務處	1	2	3
上班 / 工作	1	2	3
其他地點	1	2	3

(請指出: _____)

很多人在選擇駕駛自己的車輛或乘搭公共汽車前會考慮到許多不同的因素。當您選擇開車或坐公車時，您會評價以下的不同因素為**"從不重要""有時重要"" 通常重要"** 還是**"總是重要"**？

在選擇使用自己的車輛或乘搭公共汽車前，您認為...

7. 停泊汽車的費用：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

8. 停泊車位的數量夠不夠：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

9. 交通阻塞情況：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

10. 駕駛或保養汽車的費用：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

11. 穩定及可靠的到達時間：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

12. 方便性：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

13. 在到達地點的交通工具設備：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

14. 行程時間：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

15. 隱私權：

a. 從不重要 b. 有時重要 c. 通常重要 d. 總是重要

16. 車輛清不清潔：

a. 從不重要　b. 有時重要　c. 通常重要　d. 總是重要

17. 司機的態度：

a. 從不重要　b. 有時重要　c. 通常重要　d. 總是重要

18. 個人安全感：

a. 從不重要　b. 有時重要　c. 通常重要　d. 總是重要

19. 能否適應不同需要或情況：

a. 從不重要　b. 有時重要　c. 通常重要　d. 總是重要

20. 您在考慮使不使用自己的車輛時，以下哪兩個因素是最重要的？**請把最重要的兩個因素圈上。**

a. 停泊汽車的費用

b. 停泊車位的數量夠否

c. 交通阻塞情況

d. 駕駛或保養汽車的費用

e. 穩定及可靠的到達時間

f. 方便性

g. 在到達地點的交通工具設備

h. 行程時間

i. 隱私權

j. 車輛清不清潔

k. 司機的態度

l. 個人安全感

m. 能否適應不同需要或情況

以下的幾個問題是關於當地的公共汽車系統，例如 AC Transit。

21. 您在您家附近能夠方便地乘搭公共汽車嗎？

a. 能

b. 不能

您對以下的服務了解多少？

	非常了解	一點了解	毫不了解
22. 您家居附近的公共汽車綫路	1	2	3
23. 您家居附近的公共汽車票價	1	2	3
24. 您家具附近的公共汽車時間表	1	2	3

以下是一些關於公共汽車的看法。請您用“從不”“ 有時”“ 通常”或“總是”來形容您對每種看法的感想。

25. 當地的公共汽車總算可靠。

a. 從不 b. 有時 c. 通常 d. 總是

26. 當地的公共汽車時常來往。

a. 從不 b. 有時 c. 通常 d. 總是

27. 當地的公共汽車可算乾淨。

a. 從不 b. 有時 c. 通常 d. 總是

28. 當地的公共汽車能否快速地載我去我的目的地。

a. 從不 b. 有時 c. 通常 d. 總是

29. 跟我同輩的人都乘搭當地的公共汽車。

a. 從不 b. 有時 c. 通常 d. 總是

30. 我的朋友們都乘搭當地的公共汽車。

a. 從不 b. 有時 c. 通常 d. 總是

31. 當地公車的票價可算合理。

a. 從不 b. 有時 c. 通常 d. 總是

32. 我乘搭當地的公共汽車時感覺安全。

a. 從不 b. 有時 c. 通常 d. 總是

33. 當地公車的司機態度優良及服務周到。

a. 從不 b. 有時 c. 通常 d. 總是

34. 當地的公共汽車系統有考慮到老年人的需要。

a. 從不 b. 有時 c. 通常 d. 總是

35. 我在公車車站等候時感覺安全。

a. 從不 b. 有時 c. 通常 d. 總是

36. 公車車站的時間表和路綫地圖清楚及易明。

a. 從不 b. 有時 c. 通常 d. 總是

37. 我要走太長路才到一個車站。

a. 從不 b. 有時 c. 通常 d. 總是

38. 人們會有不同的原因不去使用公共汽車。您為何不更多乘搭公共汽車？

主要原因：_____

其他原因：_____

39. 以下的陳述，哪一個最能表達到您對公共汽車的看法？**（請只圈上一個句子）**

a. 我不使用公共汽車，而且在任何條件下都不會使用公共汽車。

b. 我不乘搭公共汽車，但在無可選擇之下會用。

c. 我不乘搭公共汽車，但在適合的條件下會用。**(請指出什麼才是合適條件:**

_____

_____**)**

d. 我乘搭公共汽車但只是有時使用。

e. 我經常乘搭公共汽車。

f. 無意見 / 不知道

本調查還有幾個關於您背景的問題。**如果您不願回答某些問題，請不用回答。**

40. 您現時的婚姻背景如何？

a. 已婚

b. 寡婦 / 寡夫

c. 已離婚

d. 已分居

e. 從未結過婚

f. 其他 **(請指出：_____)**

41. 包括您在內，您和多少個家人一起住? _____

42. 您家有多少人是持有駕駛執照？ _____

43. 您家一共有多少輛汽車？ _____

44. 請問您今年多大？_____

45. 您最高的學歷是什麼？

a. 還沒高中畢業

b. 高中畢業生

c. 受過大學教育（但未畢業）

d. 兩年大學的畢業生 / 職業訓練學的畢業生

e. 四年大學的畢業生

f. 研究畢業生

46. 您的種族背景是什麼？

a. 亞洲人

b. 黑人 / 非洲裔人

c. 拉丁美洲裔人

d. 美洲土人

e. 白人

f. **其他或混血背景 (請指出：_____)**

47. 包括退休金及社會安全金 (Social Security) 在內，您的家庭總收入一共有多少？

    a. $10,000 以下

    b. $10,000 至 $19,999

    c. $20,000 至 $29,999

    d. $30,000 至 $39,999

    e. $40,000 至 $49,999

    f. $50,000 至 $59,999

    g. $60,000 至 $69,999

    h. $70,000 以上

48. 您家居的郵區號碼是什麼？ _____

49. 性別

    a. 男

    b. 女

Removing Barriers for Seniors at Transit Stops and Stations and the Potential for Transit Ridership Growth

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ABSTRACT

As the baby boomer generation ages there is an increased need for older adult sensitive transportation. Currently a small percentage of older adults utilize public transit; however, the utilization rates are likely to increase as the corresponding population of older adults increases. Older adults are a diverse population and it is likely that future generations of older adults will require a wider range of transit options.

The current research addresses (i) barriers for older adults at transit stops and stations, and (ii) older adult public transit habits and attitudes. This discussion presents the initial findings of a survey on urban older adults' transit habits and attitudes. The preliminary findings suggest that older adults do not have enough information they require in order to access public transit, older adults are primarily concerned with real or perceived crime while utilizing public transit, and that older adults would be likely to ride public transit if the right conditions were met. Further research and actions are suggested to complete the understanding of older adult transit habits and needs.

INTRODUCTION

The aging of the baby boomer generation in the U.S. is ever-present. Among the many needs the aging population is faced with is the need for transit-sensitive and effective transportation. With the increase of older adults and the transportation, health and social challenges that arise as drivers must give up drivers licenses, public transportation fills a hopeful niche in providing a mobile population with mobility options. However, given the general underutilization of public transit, it is necessary to understand the transit habits and barriers that older adults are faced with while accessing public transit.

This study is designed to determine seniors' perspectives of, and behavior around, bus stops and transit stations in two locations (urban and suburban) and test the impact of various interventions to increase transit ridership among seniors. The research is sponsored by the California Department of Transportation (Caltrans) and is being conducted by U.C. Berkeley's California Partners for Advanced Transit and Highways (California PATH) and Traffic Safety Center. Our research includes gathering baseline measurements if ridership habits and perception of public transit at two study sites – (i) Rossmoor, a planned suburban community of older adults, and (ii) senior centers in Alameda County, an urban area serviced with fixed route transit. At Rossmoor, we are evaluating the impact of transit training for residents of the community. At the senior centers we have surveyed older adults on their transit habits and attitudes, and we are presently in the process of developing an evaluation measure on the impact of a social marketing/outreach campaign. Any changes in ridership and perception will be measured through post-intervention observations, focus groups and surveys.

Additionally, an in-depth literature review has been completed to enhance the research and provide evidenced-based intervention strategies and suggestions. The purpose of this research is to provide background on the issue of barriers for older adults accessing public transportation, primarily for future interventions in California. The completed research will identify barriers in urban and suburban areas and evaluate the impact of a range of design improvements, outreach, social marketing and training interventions on the traveling experiences of seniors in the setting of site-specific case studies. This research will enable transportation planning and policy to better serve the transit needs of an aging U.S. population.

This paper reports findings from an analysis of data from 259 completed survey questionnaires.

BACKGROUND ON OLDER ADULT MOBILTY AND TRANSIT HABITS

The primary mode of transportation for older adults is driving while public transportation remains last (*1*). Currently, only 5% of older adults use public transit as their primary mode of transportation (*1*). Although many older adults continue to use private cars as the predominant mode of transportation, many rely on public or non-private modes of transportation. Public transportation is a vital source of mobility for older adults who cannot, or choose not to, drive (*2, 3*), and for many seniors, allows access to medical/health and social needs (*4*). Additionally, public transit utilization rates are likely to increase as the older adult population increases. It would be advantageous to make public transportation more inviting to the elderly to simultaneously boost ridership with meeting their needs (*2*). There is a growing need for improvements in public transportation systems to meet the needs of the aging urban, suburban, and rural populations.

Older adults are a very diverse population and have a range of transportation requirements. Older people in the future will most likely be more healthy, educated, and active than their present counterparts; they are likely to travel frequently to a wide range of destinations and be more car dependent (*5, 2*). Older adults accustomed to private automobile travel will demand high quality public transportation. The more flexible the public transportation service is, the smoother the transition away from the private car for the older adult.

The elderly who tend to ride public transportation are low-income, minorities, and women. These populations may have specific transit needs and/or concerns such as financial, language, widowhood and outliving many of their male counterparts (*6, 2*). Spain (1997) and Rosenbloom (2002) articulate that women are the majority of the elderly population and are less likely in the coming generations to have others to care for them or the resources to fulfill their transportation needs. Similarly, older adult minorities report having more limitations of mobility and take fewer trips than their white counterparts (*7, 9*). As the demographics change with regard to race, class, and gender, older adults' mobility needs will continue to grow. Trip rates and distances have increased significantly for all groups of elderly, and they will be more likely to pursue a range of activities requiring transportation that meets a more active lifestyle (*2*).

Although older adults are increasingly becoming more active, healthier, and mobile, there continue to be physical limitations that this population faces. For example, in the event of a pedestrian to car crash older adult pedestrians (65 years of age and older) can be very frail and more prone to injury, as compared to their younger counterparts. Older adults can be vision or hearing impaired, and can have diseases such as arthritis which make it more difficult to move freely and quickly (*10*). Regardless of the type of transportation older adults utilize, it is critical to understand the demographics of this population as well as their physical needs. Transportation research and planning efforts must take the characteristics of this population into consideration to effectively meet their needs.

The U.S. Government Accountability Office (2004) has identified two types of transportation: those which are necessary (medical and health needs), and those which are life-enhancing (social and recreational activities). It has been shown that older persons who are primarily dependent on public transportation (versus private vehicle use) do not engage in comparable medical and health care needs and have high rates of social isolation (*6, 12*). Bailey (2004) identified that older adult non-drivers make 15% fewer trips to the doctor and 65% fewer social trips. Transportation promotes quality of life and increases life satisfaction by providing access to social and other activities (*14*). Older adults who maintain active lifestyles through mobility are healthier and live longer than their transportation disadvantaged counterparts who can suffer from depression and isolation (*15*). Staying active and mobile allows people to engage in their social and physical environments, helping them to reduce social isolation and increase quality of life.

Barriers to public transportation for older adults can be grouped into five categories: environmental, educational, personal, planning and policy, and technology. *Environmental barriers* are barriers which occur in the physical or built environment and that are outside the scope of an individual's control. Environmental barriers include waiting outdoors for transportation, lack of security while at a bus stop or station, inconvenient or unsafe pedestrian approaches to bus stops or stations, and transit vehicle accessibility. *Educational barriers* are barriers due to a lack of information, knowledge or training. Educational barriers

include consumer education regarding bus schedules and routes, and training for transit drivers on the specific needs of the elderly population. *Personal barriers* consist of issues such as an individual's physical limitations, perception, and psychological barriers to accessing public transportation. *Planning and policy* activities can reduce barriers to public transit by modifying and adapting strategic planning through policy and political action to enhance transit services. These include strategic planning for the cost of public transportation, system wide coordination for regional transportation, political advocacy for sustainable transportation, and partnerships with local agencies and organization. *Technological barriers* are those which limit transit advancement due to lack of up-to-date technology. The utilization of advanced technology can reduce barriers and enhance ridership by decreasing information barriers and improving the riders experience while utilizing public transportation.

In light of the five categories of potential barriers to public transportation, there needs to be strategic planning for elder mobility needs. There is a growing consensus that governments should target public transportation as the primary, and potentially safer, alternative to elderly car use (*16, 17, 5, 2, 13, 18, 11*). Rosenbloom and Morris's (1998) study on Australian and European seniors revealed that older people in these regions appear to choose the best or most convenient mode for each trip regardless of car ownership. The research implication suggests that governments can strategically structure public transit and other services to reduce car use among the elderly.

Research has begun on older adult mobility and transportation use, and further studies need to be done on specific transportation needs of older adults and what works best for this population and subsequent generations. Policies and interventions on improving elderly public transit can not succeed without taking concerns of the elderly into consideration (*6, 16, 1, 20, 15, 11*). The current research addresses one subset of the transportation needs of the elderly by looking specifically at barriers to accessing public transportation.

RESEARCH

Overview

In order to gain a better sense of senior citizens' daily transit habits and their attitudes about public transportation, a survey of seniors in the eastern San Francisco Bay Area (i.e. East Bay) was conducted. The East Bay provided an ideal sample population pool of urban seniors living in a densely-populated, urban California environment with efficient public transportation.

Methodology

The researchers designed a comprehensive paper-based qualitative and quantitative survey that relied on multiple-choice and fill-in-the-blank responses. It was distributed at select senior citizen activity centers in the cities of Oakland, Berkeley, and Emeryville over a seven month period between September 2006 and March 2007. The research team compiled an extensive (non-exhaustive) list of senior activity centers in the East Bay area and contacted 16 to inquire about the opportunity to conduct surveys at their facility. The 10 centers that agreed to the surveys were chosen as survey sites. The researcher and senior center manager then mutually agreed upon an appropriate day and time that corresponded to high-volume times when the most number of seniors visited each center.

On the day of the survey, a small table was set up in the activity center and researchers approached all passing individuals who physically appeared to be 55 and over to voluntarily participate in the survey. As an encouragement, the researcher informed individuals that participants who completed a survey will be enrolled in a raffle for a gift certificate. Seniors were not obligated to take the survey and were in no way pressured into doing so. If an individual agreed to participate, he or she was provided the necessary materials: a paper survey and pencil.

Seniors completed the surveys on their own accord with no time restrictions. If a senior required assistance due to language, vision, or physical difficulties, the researcher on hand assisted by reading the questions and completing the appropriate answer choice based on the respondent's response.

Results

A total of 259 surveys were collected and analyzed. Only affirmative, legible responses were accepted and coded. Nominal and ordinal responses were assigned a number and coded accordingly. Ratio responses were coded along value of response. Non-responses to any particular question was coded a "non-response" ("-99" suffix) and excluded from this analysis. Statistical work was done using MS Excel.

Most Bay Area urban seniors travel frequently and rely heavily on their own private automobiles. Close to 79% of those surveyed leave their house to go somewhere 5 days or more per week. The survey asked about daily events such as grocery shopping, going to restaurants, and visiting family. For each mentioned activity over 50% of seniors responded that their primary mode of transportation was the private automobile. In addition, a majority of seniors (58.4%) replied that they drive themselves to places.

TABLE 1 Ranking of Average Number of Days Traveled, Urban Seniors

Number of Days (Top 5)	**Percentage**
7 Days	51.8%
5 Days	15.6%
6 Days	13.6%
4 Days	5.5%
3 Days	4.7%

When asked about the distance to respective places frequented by seniors, the majority of those surveyed believed that the time it takes to get there is "short" or "not too short or long [i.e. medium]" which suggests that distance may not be a factor in their automobile use. What is a factor is convenience and personal safety. When asked, these two ranked the highest (29.5% and 23.8% respectively) out of a list of thirteen common reasons for continued automobile use.

TABLE 2 Factors Urban Seniors Consider when Deciding between Car or Public Transit (Top 5)

Top 5 Factors	Percentage
Convenience	29.5%
Personal Safety	23.8%
Traffic Congestion	18.6%
Cost of Driving	18.1%
Travel Time	15.7%

TABLE 3 Urban Senior Perception of Various Distances

	Short Time	Not Too Long or Short	Long Time
Grocery Store	65% (n=144)	31% (n=70)	4% (n=9)
Restaurant	40% (n=67)	51% (n=86)	9% (n=15)
Mall	33% (n=53)	51% (n=80)	17% (n=26)
Doctor / Dentist	36% (n=78)	48% (n=104)	16% (n=35)
Senior Activity Center	54% (n=132)	30% (n=32)	16% (n=39)
Work	34% (n=18)	38% (n=20)	28% (n=15)
Other Destination	26% (n=17)	65% (n=42)	9% (n=6)

Public Transportation Findings

A vast majority (79%) of seniors in the Bay Area believe that they have "convenient access to buses near [their] homes." Yet it appears that information about buses remains a major barrier. When asked if they knew about bus routes in their area, most seniors (69%) replied that they knew "little" or "nothing". In fact, when asked about the bus fares and schedules, the most common response was that they also knew "little" (see Figure 2). While terms such as "a lot" or "little" may be subjective on the part of the respondent, it does indicate a level of comfort seniors have with regards to the basic information necessary for successful public transit use.

FIGURE 1 Do You Have Convenient Access to Public Transportation near Your Home?

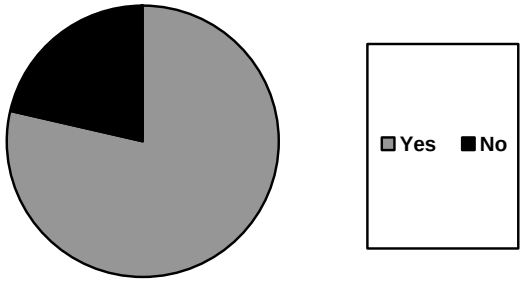
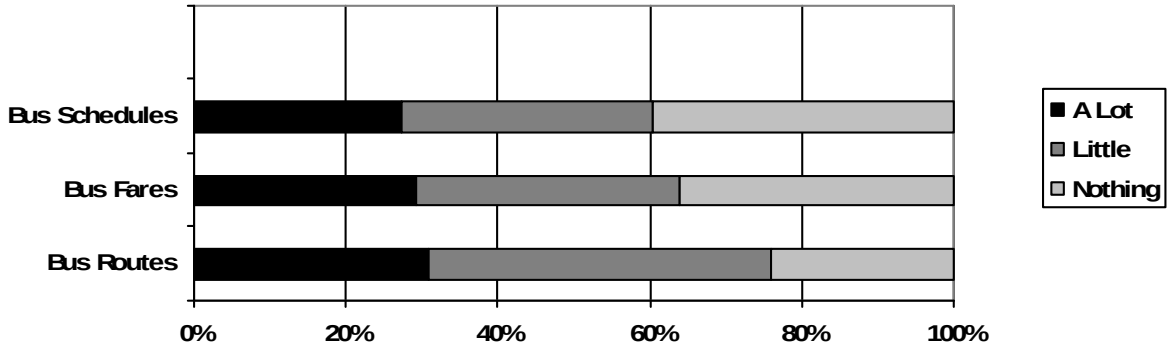


FIGURE 2 How Much Do You Know about Each of the Following?



The infrequent use of buses is also reflected in how seniors describe their own bus use status. The plurality of seniors replied that they "do use the bus but only occasionally". Yet the ambiguity in Question 39 between responses "I DO NOT use the bus and will only use it of I had no other choice" and "I DO NOT use the bus but will consider using it under the right circumstances" (due to similarity in wording) suggests that the two may be interpreted the same way, thus if their responses are combined, it further suggests that the current limited use of public transportation can be increased under the right circumstances.

Questions about seniors' perception of public buses reveal what seniors perceive as a barrier. First, bus reliability and operations received high positive feedback. Bus reliability perception remains high (67.4% of seniors believe buses are "usually" or "always" reliable) as well as bus frequency (58.6% believe "usually" or "always" frequent) and bus rapidity (54.2% believe "usually" or "always" rapid). Yet issues of safety, peer acceptance, and information remain low. Seniors' perception of safety remains low, no matter on the bus (53.6% feel it is "never" or only "sometimes" safe onboard) or waiting at stops (53.2% feel it is "never" or only "sometimes" safe at stops). Similar results were found for the issue of peer usage, with 56.7% of respondents saying people their age seldom use public transit. When asked about how considerate buses are of "senior citizen" concerns, 54.2% feel it is minimal. Information poses a similar barrier. Seniors find that schedules and route maps to be harder to understand than they would like (54.8% find maps and schedules "never" or only "sometimes" easy). A surprising finding is the perception of transit fare costs by senior

citizens. The percentage of respondents who feel fares are “never” inexpensive (22.3%) received the highest negative perception for questions related to their perception of public transit.

TABLE 4 Urban Seniors’ Perception of Public Transportation

	Never	Sometimes	Usually	Always	TOTAL
Local buses are reliable overall	3% (n=7)	29% (n=62)	58% (n=123)	10% (n=20)	100%
Local buses come frequently	6% (n=12)	36% (n=73)	50% (n=102)	9% (n=18)	101%
Local buses are clean	3% (n=6)	40% (n=81)	48% (n=99)	9% (n=19)	100%
Local buses get me from one place to another quickly	12% (n=24)	34% (n=69)	45% (n=92)	9% (n=18)	100%
People who are my age use local buses	9% (n=19)	47% (n=96)	37% (n=74)	7% (n=15)	100%
My friends use local buses	19% (n=40)	57% (n=122)	17% (n=31)	8% (n=17)	101%
The local bus system is considerate of senior citizen concerns	4% (n=9)	50% (n=101)	34% (n=69)	12% (n=24)	100%
Local bus fares are inexpensive	24% (n=45)	32% (n=75)	32% (n=68)	8% (n=17)	100%
I feel safe riding on local buses	11% (n=24)	42% (n=90)	36% (n=75)	10% (n=22)	99%
I feel safe waiting at bus stops	13% (n=27)	40% (n=81)	36% (n=73)	11% (n=22)	100%
Local bus drivers are friendly and polite	2% (n=5)	39% (n=82)	46% (n=96)	12% (n=26)	99%
The schedule and route maps listed at bus stops are easy to understand	11% (n=22)	44% (n=88)	29% (n=58)	16% (n=33)	100%
I walk too long to get to a bus stop	42% (n=85)	36% (n=72)	13% (n=27)	9% (n=18)	100%

Open-ended responses by seniors seem to indicate that convenience remains a key issue (only 30% of respondents provided a response). When asked to give their position on why they don’t use the bus more often, seniors were provided opportunities to respond freely as to what they felt were most appropriate. During the analysis, researchers reviewed the responses and grouped the most common responses that shared a similar sentiment into distinct categories. The most prevalent of these categories found seniors generally stating a preference for their vehicle without stating specific reasons. They simply preferred their car. Responses in this category include “it is better for me to use my car,” and “driving is more convenient.” Another popular response referred to the inconvenience of buses / public transit themselves. Common responses include “buses are inconvenient,” and “buses are not for me.” Other responses talk more to specific issues, such as “it does not get me where I want to go on time” (time issue), “it does not run at night” (service issue) or “it is too far from my house” (location issue). Such free-responses speak to the prevalence of the dependence on private automobile that may be the result of already irrational biases against public transportation. The results indicate the need to actively clear up any misconceptions or provide new information about the convenience of public transit.

TABLE 5 Open-ended Responses on Perception of Cars vs. Public Transportation

Type of Response	Number of Responses	Examples
General Convenience of Cars	44	"it is better for me to use my car" / "driving is more convenient"
General Inconvenience of Buses	32	"buses are inconvenient," / "buses are not for me" / "I just don't like buses"
Specific Inconvenience: Time	10	"it does not get me where I want to go on time" / "buses take too long to get to XXX"
Specific Inconvenience: Service	6	"it does not run at night" / "it does not run on the weekends" / "the bus I need does not stop near my home"
Specific Inconvenience: Location	8	"I'm not close to the bus stop" / "I walk to far to get to the bus"

Car Users vs. Bus Users

We also analyzed the responses on public transit perceptions between those who primarily use their personal vehicle (i.e. car users) and those who primarily use public transit (i.e. bus users). A respondent is classified a "car user" or "bus user" by the frequency of their use of either forms of transportation in a given week. Those who use their cars more than public transit (or vice versa) in a given week are classified as a "car user" or "bus user" accordingly. Both car and bus users overwhelmingly feel they have good *access* to public transportation near their homes, with almost 4 out of 5 car users and bus users agreeing to this respectively. This may be due to the extensive network of public transit in the major Bay Area cities. Yet perceptions of *service* differ much more between the groups. For example, among car users, the perception of bus reliability is at 60% but among bus users, it is at an astounding 97%. While the majority of both groups believe bus service is overall reliable, the large difference between the two majorities shows a clear difference in perception. Other key factors also show the discrepancy between car and bus users. With the issue of bus safety and wait time, a slight majority of car users consider safety as adequate. Meanwhile, only a small majority of car users believe bus wait time is satisfactory. Conversely, a majority of bus users find both safety and frequency are adequate. Overall, it appears that bus users are more satisfied with public transit, but not by much on issues of safety and frequency. This is not surprising considering that overall, these two issues remain high on any individual's criteria for using public transit.

TABLE 6 Comparison of Key Findings between Car and Bus Users

Car Users

Issue	Yes	No
Do you think you have convenient access to buses near your home?	77% (n=134)	23% (n=40)
I think local buses are reliable overall.	59% (n=83)	41% (n=57)
I feel safe riding on local buses.	45% (n=66)	55% (n=81)
I think local buses come frequently.	53% (n=73)	47% (n=64)

Bus Users

Issue	Yes	No
Do you think you have convenient access to buses near your home?	80% (n=66)	20% (n=17)
I think local buses are reliable overall.	97% (n=61)	3% (n=2)
I feel safe riding on local buses.	51% (n=40)	49% (n=39)
I think local buses come frequently.	62% (n=48)	38% (n=30)

Demographics and Mode of Transportation

A look at the respondents' demographics and responses reveal that there is no statistically significant difference between income and car use. Both lower and higher income individuals use the private automobile as their primary mode of transportation. Again, the results are not surprising when analyzing gender and car use. Similar proportions of men and women used public transit.

TABLE 7 Demographics and Mode of Transportation

	Car	Public Transit			Car	Public Transit
Income 40k or more	81%	19%		Male	68%	32%
Income < 40k	66%	34%		Female	77%	23%
	Car	Public Transit			Car	Public Transit
Less Educated.	70%	30%		White	61%	39%
More Educated.	77%	23%		Non-White	79%	21%

Key Survey Findings

Based on the survey results and analysis, several key findings emerged.

- Bus riders generally have more favorable perceptions of public transportation than drivers or passengers of private vehicles.
- Of the urban seniors who travel, many do it frequently, going out almost daily.
- Most mobile seniors use the private automobile for their travel, even for short distances.
- While mobile seniors DO know about the availability of public transportation near their homes, most possess little or no knowledge of fares, schedules, and routes.
- Mobile seniors will use public transportation if basic conditions are met.
- Chief among the complaints of public transportation is convenience and safety.
- The encouragement of seniors to use more public transit must be targeted at all income, racial and educational groups as well as both genders.
- Our findings were predominantly consistent with the transit habit findings in the literature review.

Implications

Results from our survey on urban older adults reveal similar patterns compared to past studies. First, barriers – environmental, educational, personal, planning and policy, and technological – continue to exist for seniors. Second, such barriers need to be identified, addressed, and dismantled in order to increase the number of seniors who use public transit. All barrier categories need to be addressed.

The results from the initial survey suggest that older adults are willing to use public transportation if the right conditions are met. The meaning of "right conditions" is a bit ambiguous and may vary from locale to locale depending on factors such as the size of the geographical region, development density, climate, and/or cost of transit. However, from our findings we have identified three key issues to understanding the needs and habits of older adults public transit use. First, ensuring information availability and outreach regarding the transit systems is critical to older adult's knowledge in regards to public transit. Second, concerns for convenience and safety are at the top of the list when it comes to older adults concerns regarding public transit. And third, older adults are a diverse population and all outreach and planning efforts must target older adults of all economic, racial, educational groups, as well as both genders.

Yet accordingly, our survey results seem to suggest that personal fears and lack of information pose a higher barrier for seniors than previously thought. While it remains true that older adults who live in the East Bay may not represent the attitudes and trends of all seniors, they do represent our target population: seniors in urban environments with access to established, efficient public transportation. For this group, the objective is two-fold. One, service and facilities must be improved to better meet seniors' need for convenience and accessibility. Two, seniors also require adequate information on the current available public transit system and its services in order to use it. Removing of physical and political barriers is perhaps the more complex task with higher costs and longer term planning. From a management standpoint, this very well involves impact reports, public review, construction, and major shifting in appropriations. As a more short-term task, it may be beneficial to target the more personal barriers of fear and lack of knowledge. Providing the necessary assistance

in breaking this barrier may be the first step to getting seniors to feel comfortable about public transit.

CONCLUSIONS AND NEXT STEPS

Next steps for this study will include partnering with a local organization and implementing an education-based intervention. The intervention will primarily focus on providing older adults with the information that they require in order to feel comfortable and safe accessing public transit. A sampling method will be developed to obtain a representative sample of greater San Francisco Bay Area residents.

Our research acknowledges that specifically looking at exclusively the barriers to public transportation at bus stops and stations is a very small sub-section, albeit a very important sub-section, of the transit needs of the older population. There are many other subsections of older adult transportation research that are needed in order to obtain a full picture of the mobility needs, habits and attitudes older adults have. Further research that would be beneficial to this field includes:

- Strategies and interventions to address real or perceived issues of crime while utilizing public transit
- Effective educational interventions and outreach to encourage public transit ridership
- Cultural attachments to a car-dependent lifestyle, and how this is changing with the new wave of older adults
- Shift the current transportation mindset to align with sustainability principles for the environment and individual transit needs
- Creating increasingly “flexible” transit options
- Multi-modal and multi-usage transportation

This further research would enable there to be a comprehensive view and approach to older adult transportation. A comprehensive view of transit needs for older adults would serve as a tool for many professionals in preparing for the surge of baby boomers entering old age.

In light of this research on older adult mobility and transit needs, it is critical to look at transit needs and habits of all people from every age group. It is reasonable to suggest that persons who are familiar with public transit are more likely to ride public transit all throughout their lives and into their elder years. Similarly, those who never or infrequently ride public transit are likely to not change their transit habits solely due to increasing age. This brings up two issues: first, some older adults may have a difficult time adjusting to new transit habits and learning new skills and systems based on life-long transit habits, therefore public transit options must be sensitive to older adults and their changing transit needs. The greater sense of satisfaction of transit among those who take buses versus those who drive or are driven (per the survey results) is perhaps a good omen for transit, especially in light of the growing role public transportation will need to play in older adults’ lives. Second, having a wide array of transit options is not only beneficial for the elderly. People of all ages should have access to, be skilled at, and actively utilize forms of transit other than the private automobile. This level of transit flexibility and knowledge will better prepare people of all ages for their present and future transit needs, as well as having the potential to contribute to sustainable transportation for the future.

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Removing Barriers for Seniors at Transit Stops and Stations In Urban Alameda County: Survey Results

Rhianna Babka **Jill Cooper, MSW** **David Ragland, PhD, MPH**

Introduction:

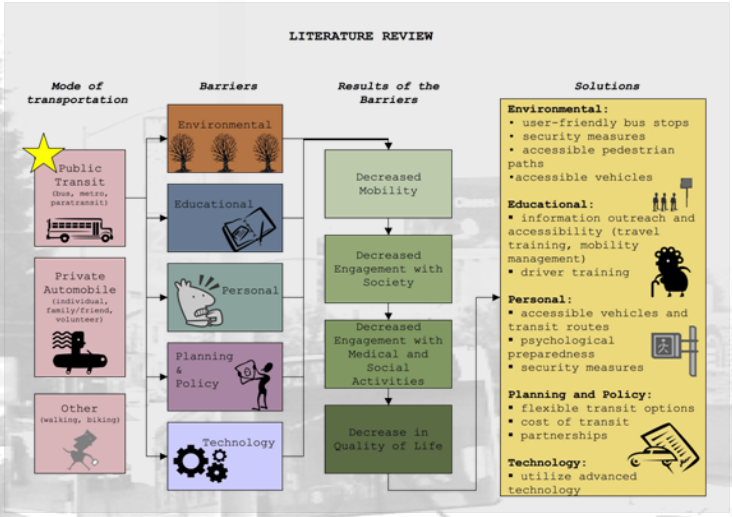
To meet the transportation needs of older adults in California and Nationwide, the California Department of Transportation (Caltrans) has sponsored a research study, in conjunction with the University of California at Berkley Traffic Safety Center (TSC) and Partners for Advanced Transit and Highways (PATH), to understand barriers to older adults use of public transit.

Problem:

- In California the older adult population is projected to more than double from 2000 to 2030.
- Older adults need transportation in order to maintain social, mental, and physical health, mobility, and quality of life
- Public transportation fills a hopeful niche in providing a mobile population with mobility options
- Older persons who are primarily dependent on public transportation (versus private vehicle use) do not engage in comparable medical and health care needs and have high rates of social isolation
- Transportation promotes quality of life and increases life satisfaction by providing access to social, medical, and other activities

Method:

In order to gain a better sense of senior citizens' daily transit habits and their attitudes about public transportation, a survey of seniors in the eastern San Francisco Bay Area (i.e. East Bay) was conducted. The East Bay provided an ideal sample population pool of urban seniors living in a densely-populated, urban California environment with efficient public transportation.



Findings:

- A total of 259 surveys of older adults were collected at senior activity centers and analyzed.
- Bus riders generally have more favorable perceptions of public transportation than drivers or passengers of private vehicles.
- Both car and bus users overwhelmingly feel they have good access to public transportation near their homes, with almost 4 out of 5 car users and bus users agreeing to this respectively.
- Perceptions of service between bus users and car drivers differ between the groups, for example, among car users, the perception of bus reliability is at 60% but among bus users, it is at 97%.
- Chief among the complaints of public transportation is convenience and safety.
- 79% of seniors in the Bay Area believe that they have "convenient access to buses near [their] homes."
- The encouragement of seniors to use more public transit must be targeted at all income, racial and educational groups as well as both genders.

Conclusions:

1) Ensuring information availability and outreach regarding the transit systems is critical to older adult's knowledge in regards to public transit.

2) Service and facilities must be improved to better meet seniors' need for convenience and accessibility.

3) Concerns for convenience and safety are at the top of the list when it comes to older adults concerns regarding public transit.

4) Older adults are a diverse population and all outreach and planning efforts must target older adults of all economic, racial, educational groups, as well as both genders.

Next Steps:

- Partner with United Seniors of Oakland and Alameda County (USOAC) in implementation of Travel Training at urban senior activity centers
- Conduct Pre and Post Travel Training intervention surveys
- Monitor older adults public transit ridership changes over time

Special thanks to Senior Activity Centers in Oakland, Emeryville, and Berkeley, CA

PUBLIC TRANSIT TRAINING:
A MECHANISM TO INCREASE RIDERSHIP AMONG OLDER ADULTS

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PUBLIC TRANSIT TRAINING:
A MECHANISM TO INCREASE RIDERSHIP AMONG OLDER ADULTS

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ABSTRACT

In the United States, the older adult community is forecast to more than double by 2030. Research is needed to address their increasing mobility needs and perceived public transit barriers. In this paper, researchers evaluate the effectiveness of the Rossmoor Senior Adult Community transit training class (Walnut Creek, California). In Summer 2007, surveys were implemented before-and-after transit training sessions to assess changes in attitudes and intended transit behaviors. Surveys also were administered to participants who had taken the training course over the past two years to identify any longer-term changes in public transit use (longitudinal survey). Results of the 'before-and-after" survey revealed a positive shift in participant comfort levels in taking public transportation and increased confidence in locating transit information. The majority of respondents (85.7%) stated that they planned to take transit more frequently after training. Longitudinal survey results revealed a significant decrease in private auto use as their primary transportation mode after training. Bus and transit information resource use increased significantly after training. Results from both study populations indicate that training may have an immediate impact on attitudes towards public transit and result in longer-term travel behavioral changes.

Key Words: Pubic transportation, transit training, older adults, barriers, self-efficacy, social cognitive theory

EXECUTIVE SUMMARY

As the number of older adults living in the United States (U.S.) continues to rise, providing adequate transportation services for an increasing number of older travelers presents several challenges (Shaheen and Rodier 2007; Burkhardt et al. 2002). There are currently an estimated 35 million senior citizens living in the U.S., and this population is expected to more than double by the year 2030, comprising 20% of the U.S. population (Shaheen and Rodier 2007; Meyer 2001; Himes 2002). These travelers include the Baby Boomer cohort, some 76 million strong (Himes 2002). Not only will the Baby Boomers contribute to a substantial rise in the number of elderly travelers, but due to numerous medical advances, they will be among the healthiest and longest-living individuals in America. This large change in the demographic landscape of America will lead to great implications for all aspects of life, not the least of which will be transportation.

This paper evaluates the effectiveness of an in-person, transit training program offered at the Rossmoor Senior Adult Community in Walnut Creek, California. The ongoing transit training classes teach residents about local transit options and information resources. The classes draw upon social cognitive theory and its emphasis on self-efficacy to encourage older travelers to learn about public transit use and promote desired behaviors in seniors. A primary motivation of this study is to examine stated and actual behavioral changes following the Rossmoor transit training. The before-and-after and longitudinal surveys provided researchers with two methods for examining training impacts: immediate (intended response) and longitudinal (change over time).

Methodology

In Summer 2007, researchers implemented surveys with participants prior to and following the transit training sessions to assess changes in perceptions and intended transit use (before-and-after survey). In addition, a questionnaire was administered to residents who had taken the transit training course over the past two years to identify any longer-term changes in their transit use and attitudes (longitudinal survey).

Key Findings

Prior to training, the private automobile was the primary transportation mode for most participants. After training, a majority of before-and-after survey participants (85.7%) stated that they planned to take public transit more frequently in the future; a positive shift occurred in participant comfort levels taking the Rossmoor and County Connection buses to key destinations within the community (all p-values <0.004); and participant confidence with finding transit information (e.g., schedules, routes) increased after training ($p=0.001$).

While the “before-and-after” survey relied on the reported intentions of participants to take public transit, the longitudinal survey allowed researchers to examine behavioral change. After training, there was a significant decrease in private auto use as the primary transportation mode ($p=0.001$); public transit use increased significantly ($p=0.006$), Rossmoor bus ridership showed

no change (p=1), while ridership on the County Connection bus increased significantly (p=0.02); and use of transit information resources increased significantly after training (p<0.0001).

Conclusions

Longitudinal survey findings are supported by feedback from the Rossmoor Transit Operator. Rossmoor bus ridership has increased slightly since August 2007. Furthermore, the Rossmoor Transportation Office has noticed a substantial increase in transit schedule and route inquiries, as well as training requests. Consequently, the Rossmoor transit operator has expanded the training program to include additional instructors and sessions (Gretchen Hansen, unpublished data, July 2008).

Researchers recommend enhancing the transit training by implementing several improvements: 1) developing a follow-up class one month after the initial training, as older adults may need repeated sessions to strengthen their memories and understanding; 2) adding training on evening routes and other public transit options (i.e., BART and Muni); and 3) providing uniformity across all sessions to ensure participants are provided with the same information and handouts. Other suggested improvements include: 1) media campaigns encouraging seniors to plan ahead; 2) area- or provider-specific websites that supply riders with reliable, up-to-date information about available transportation options (U.S. GAO 2004); 3) streamlining connectivity between transit providers to improve transfers and accessibility for older adults; and 4) offering more direct and evening routes.

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1. INTRODUCTION

As the number of older adults living in the United States (U.S.) continues to rise, providing adequate transportation services for an increasing number of older travelers presents several challenges (Shaheen and Rodier 2007; Burkhardt et al. 2002). There are currently an estimated 35 million senior citizens living in the U.S., and this population is expected to more than double by the year 2030, comprising 20% of the U.S. population (Shaheen and Rodier 2007; Meyer 2001; Himes 2002). These travelers include the Baby Boomer cohort, some 76 million strong (Himes 2002). Not only will the Baby Boomers contribute to a substantial rise in the number of elderly travelers, but due to numerous medical advances, they will be among the healthiest and longest-living individuals in America. This large change in the demographic landscape of America will lead to great implications for all aspects of life, not the least of which will be transportation.

Automobiles are integral to the lives of older Americans and the aging Baby Boomer population. Elderly Americans rely on their personal auto for a majority of their trips, more than any other age group (Pucher and Renne 2003). Despite improvements in medicine, physical and cognitive changes continue to accompany the aging of older adults and may compromise their ability to drive, particularly after the age of 75 (Shaheen and Rodier 2007; Lyman et al. 2002). Driving cessation reduces the mobility of older adults, particularly if there are no other modes of transportation that are easily accessible (Bailey 2004). This lack of connection with the outside world only leads to greater psychological distress and lower life satisfaction (Shaheen and Rodier 2007; Lyman et al. 2002; Braver and Trempel 2004; Collia et al. 2003).

Exacerbating the transportation problem are the phenomenon of aging-in-place and the movement of Baby Boomers into the suburbs. The suburbanization of the elderly population removes them from easy access to transit options, making driving more preferable and convenient. Giving up their driver's licenses would mean more than a cessation of driving and would radically change their lifestyles, likely reducing their travel outside of the home (Rosenbloom 2003). The aging of the Baby Boomers and the subsequent growth in the older American population is expected to strain current transportation resources in the U.S. (Rosenbloom 2003; Koffman et al. 2004). A growing older adult population with increased longevity also means there will be a greater number of individuals relying on public transportation for a longer time period (Koffman et al. 2004). To enable older adults to maintain healthy, active, and involved lifestyles, development of adequate transportation alternatives is needed (Harrison and Ragland 2003).

Despite the need for alternative transportation among older adults, public transit is grossly underused among this population (Pucher and Renne 2003; Rosenbloom 2003). Many older adults cannot access transit because there is a lack of available services in their neighborhoods and communities *(*Shaheen and Rodier 2007; Holmes et al. 2002). However, research indicates that older adults would not use public transit even if services were available to them *(*Shaheen and Rodier 2007; Holmes et al. 2002). In addition, many older travelers are unfamiliar with transit and may experience a number of potential barriers that prevent them from accessing it including physical and cognitive challenges and an overall lack of information on

routes and services (Shaheen and Rodier 2007; Ritter et al. 2002; Burkhardt 2002; Burkhardt et al. 2002). Research suggests that older travelers may require additional information and instruction on how to access public transit including "mobility planning and training programs" (Shaheen and Rodier 2007; Burkhardt et al. 2002).

This paper evaluates the effectiveness of an in-person, transit training program offered at the Rossmoor Senior Adult Community in Walnut Creek, California. The ongoing transit training classes teach residents about local transit options and information sources. The training also includes a bus tour of the route lines of the two major buses available to the community: the Rossmoor and County Connection buses. The classes draw upon social cognitive theory and its emphasis on self-efficacy to encourage older travelers to learn about public transit use and promote desired behaviors in seniors. In Summer 2007, researchers implemented surveys with participants prior to and following the transit training sessions to assess changes in perceptions and intended transit use (before-and-after survey). In addition, a questionnaire was administered to residents who had taken the transit training course over the past two years to identify any longer-term changes in their transit use and attitudes (longitudinal survey).

This paper consists of four main sections. First, the authors begin with a review of the literature on aging trends and mobility, as well as self-efficacy and social cognitive theories relevant to the transit training. A methodological discussion follows including survey design, response rate, and study limitations. Next, the authors present the study results. In the last section, a summary of key findings and conclusions is provided.

2. LITERATURE REVIEW

This literature review is focused on current and future trends associated with the growing senior population in the U.S. The authors also describe social cognitive and self-efficacy theories relevant to the transit training study. It includes six sections: 1) growth trends, 2) older drivers, 3) driving cessation, 4) public transportation barriers, 5) the aging-in-place phenomenon, and 6) self-efficacy and social cognitive theory.

2.1 Growth Trends

According to the U.S. Census Bureau 2000, individuals aged 65 and older numbered 35 million and made up 12 percent of the U.S. population (Meyer 2001; Himes 2002). This number is expected to double by 2030 as members of the Baby Boomer cohort—approximately 76 million born from 1946 to 1964—join the ranks of those aged 65 and older (Himes 2002). Not only will Baby Boomers contribute to a quickly growing older adult population, but due to numerous medical advances, they will be among the healthiest and longest-living individuals in America. In 2000, life expectancy increased by approximately four years for men and women 65 and older (based upon 1950 projections) (Himes 2002; U.S. Census Bureau 2000). Individuals aged 85 and older have become the fastest growing population segment (Himes 2002). Furthermore, the gender gap is increasing (i.e., there are many more women than men later in life) (Himes 2002). These changes in the U.S. demographic landscape will lead to notable impacts on all aspects of life, including transportation.

2.2 Older Drivers

Automobiles are integral to the lives of older Americans and the aging Baby Boomers. The National Household Travel Survey (NHTS) indicates that seniors rely on their personal auto for 89.1% of their trips, more than any other age group (Pucher and Renne 2003). Furthermore, older adults predominantly serve as drivers for their trips, in contrast to other age groups who tend to be passengers—except those between 40 and 64 years of age (Pucher and Renne 2003). Another indication of the perceived need to drive is the licensing rate of older adults aged 65 and over. In 1997, over 90% of men and 80% of women over age 65 possessed licenses. In 2004, over 28 million licensed drivers were over 65 (Rosenbloom 2003; CDC 2007). The number of older U.S. drivers is likely to increase as Americans continue to age and live longer. Hu *et al.* (2000) predicts that by 2025 drivers between the ages of 65 and 69 will increase by 7% among men and 28% among women, while drivers 85 and older will increase by 22.3% for men and 113% for women (Hu et al. 2000).

2.3 Driving Cessation

Despite improvements in medicine, physical and cognitive changes continue to accompany aging in older adults and may compromise driving ability. Thus, the large number of older drivers on the road is potentially dangerous for others and themselves. In 1995, older drivers comprised 8% of annual miles driven but accounted for 13% of all vehicle crash fatalities (Lyman et al. 2002). The relatively high rate of fatality is likely due to physical fragility and vulnerability to crash

impacts (Lyman et al. 2002; Coughlin and Tallon 1999). Other accidents involving older drivers are linked to age-related disabilities that afflict older Americans. Research indicates that many older adults are forced to relinquish their licenses due to health-related reasons. Vision and hearing deterioration and declines in cognitive and perceptual functions may compromise an older adult's driving ability. Physical limitations, such as decreased strength and flexibility, also make safe driving challenging (Coughlin and Tallon 1999; Shaheen and Niemeier 2001). To compensate for disabilities, older drivers tend to limit driving to certain hours or particular streets (e.g., those with speed limits of 55 miles per hour or less), with peak travel occurring between 9am and 4pm (Lyman et al. 2002; Braver and Trempel 2004; Collia et al. 2003). Ultimately, these health problems often lead to driving cessation.

Driving cessation has additional implications for the lives and well being of older Americans besides decreased mobility. In their study of driving cessation impacts, Harrison and Ragland (2003) found that cessation adversely affects the quality of life of seniors. Older adults tend to feel a loss of independence and increased feelings of isolation and depression (Harrison and Ragland 2003). Driving cessation reduces mobility, particularly if there are no easily accessible transportation modes. According to Foley *et al.* (2002), men between the ages of 70 and 74 will rely on alternative transportation an average of seven years after driving cessation, and women in the same age range for ten years (Foley et al. 2002). Despite the need for alternative transportation modes, older adults grossly underuse public transit—making up only 1.3 percent of all trips in 2001 (Pucher and Renne 2003; Rosenbloom 2003). Furthermore, over half of non-drivers stay home on any given day in contrast to 17% of older drivers staying home on any given day. Non-drivers also make fewer trips for medical, social, family, and religious purposes (Bailey 2004). This lack of connection to the outside world only leads to greater psychological distress and lower life satisfaction. Finally, a study conducted by Marottoli *et al.* (2000) found that a less active lifestyle could result in higher risks of heart disease, stroke, and fractures and further decline of cognitive abilities (Shaheen and Rodier 2007; Marottoli et al. 2000).

2.4 Public Transportation Barriers

There are a number of potential barriers that prevent older adults from using public transportation. In several research studies, participants mentioned the following concerns regarding public transit (Shaheen and Rodier 2007; Ritter et al. 2002; Burkhardt 2002; Burkhardt et al. 2002):

- Lack of door-to-door services;
- Infrequent schedules;
- Lack of direct routes and stops at certain key destinations;
- Reliability of transit services;
- Transfers;
- Safety on buses, walking to bus stops, and at bus shelters;
- Physical concerns (e.g., climbing stairs, walking to bus stops, carrying large bags on board, etc.); and
- Financial concerns about public transportation costs.

Burkhardt (1999) examined the loss of independence that many seniors associate with driving cessation and how dependence on others can be perceived as an inconvenience (Burkhardt 1999). This mindset is another potential barrier to public transit use among older adults, as many are highly resistant to assistance. In a recent article, Dumbaugh (2008) describes the intrinsic barriers of the built environment, emphasizing the impacts of community planning and design on public transportation, as well as a community's ability to provide transportation services for older adults (Dumbaugh 2008).

According to the National Household Travel Survey, only about half of all Americans have access to public transportation (Bailey 2004; NHTS 2004). This leaves many, particularly those in rural areas, with no viable alternatives to the private auto. And even where public transit is available, most seniors still prefer to drive. According to a study by Burkhardt *et al*. (2002), some of the qualities that make driving more appealing are the same as those that discourage older Americans from using public transit, such as instant access (no need to rely on a set schedule), direct connections (no transfers), and reliability (Burkhardt et al. 2002).

"Senior-friendly" transit options that provide more direct routes, are located in safe areas, and employ drivers that can provide assistance are needed to create better public transit options (Kerschner and Aizenberg 2004). In 2000, the Beverly Foundation developed five important factors for addressing potential transit barriers including: 1) availability (e.g., 24/7); 2) accessibility (e.g., low-floor buses and stairs, high seats, and reachable bus stops); 3) acceptability (i.e., cleanliness, safety, and user friendliness); 4) affordability; and 5) adaptability (e.g., wheelchair friendly, trip chaining possible) (Kerschner and Aizenberg 2004; Kerschner and Harris 2007s).

2.5 Aging-in-Place Phenomenon

Exacerbating the transportation problem is the aging-in-place phenomenon and movement of the Baby Boomers into the suburbs. Aging-in-place refers to the situation in which an individual chooses to stay and grow older in the same home in which she lived and worked during her younger years. This phenomenon has contributed to the "graying" of the suburbs where 56% of the elderly live (Rosenbloom 2003; DeSalles 2002).

The need for transportation alternatives is even more critical in light of the growing Baby Boomer population who will likely continue to live in the suburbs. A recent analysis of 102 metropolitan areas across the U.S. indicated that the suburbs are getting older, and individuals 35 years and older continue to move there at a higher rate than cities (Frey 2003). In 2000, 70% of those 35 and older lived in the suburbs (Frey 2003). Given this trend, institutions all over the U.S. are anticipating the strain that this will cause on existing public transportation and are developing new services to prepare for the aging Baby Boomers.

One approach to the aging-in-place phenomenon is the development of older adult communities aimed at allowing seniors to maintain their independence after retirement. These communities either arise in planned retirement communities or naturally occurring retirement communities (Dalrymple; Ormond 2004). Generally, both types aim to become "livable communities" that offer all the essential services and activities that enable residents to continue living full and active lifestyles after retirement (Kochera and Straight 2005). In this way, older adults are able to continue living in homes, which have either been modified or built as low maintenance, in a community with their peers (Lawler 2001). Additionally, mobility and

transportation services provide older adult residents easy access to medical and shopping centers located nearby (Himes 2002; Kochera and Straight 2005).

2.6 Self-Efficacy and Social Cognitive Theory

Bandura's (1997) social cognitive theory is an extension of social learning theory and stresses the important influence of cognitive processes on human behaviors and motivations (Bandura 1997). According to social cognitive theory, human functioning results from the interaction among behavior, the environment, and personal factors—a relationship Bandura refers to as "triadic reciprocality" (Bandura 1986; Pajares 2002). Personal factors include what Bandura refers to as a "self system" that allows individuals to reflect on and regulate their actions and thoughts, and to therefore change their environment (Pajares 2003). According to this view, an individual's perception of his or her own ability can be a better indication of future behaviors and motivations (Bandura and Cervone 1983; Cervone and Peake 1986; Peake and Cervone 1989). This measure of self-efficacy is central to Bandura's social cognitive theory (Pajares 2002).

Self-efficacy is the idea that an individual's perceptions of their own capabilities influence their actions and life events (Bandura 1994). A strong sense of self-efficacy, or faith in one's own abilities, leads to a more active and involved life in which difficult situations are not avoided but are seen as challenges to be overcome (Bandura 1994). This manner of approaching life reduces stress, lowers the risk of depression, and leads to a greater commitment to goal setting (Bandura 1994). On the other hand, those with a weak sense of self-efficacy may limit their potential and avoid situations in which failure may be a high possibility (Bandura 1994). As such, individuals with little faith in their own capabilities are vulnerable to depression and high stress and have a low commitment to goal attainment (Bandura 1994). Self-efficacy, however, varies across different situations and behaviors (Grembowski et al. 1993). One may show high self-efficacy in maintaining a certain behavior but low self-efficacy in another.

One way in which to build self-efficacy is through social modeling. Social modeling centers on the idea that when an individual witnesses peers perceived to be similar to himself succeed in a task, he is more likely to believe in his own ability to complete the task as well. The alternative may also be true—if his peers fail, the individual may expect to have the same result and may be discouraged from trying the task (Bandura 1994). Social models also provide a forum in which individuals may learn from those peers that possess capabilities that they themselves aspire to, and as such, they may acquire new knowledge or capabilities that increase their own self-efficacy (Bandura 1994).

It is especially important for older adults to maintain higher levels of self-efficacy. Old age often leads to physical disabilities that force seniors to reassess their capabilities (Bandura 1994). Rather than viewing this negatively, a more optimistic point of view would be to use the intellect and experiences gained over the years to make up for physical disabilities. Thus, a high sense of self-efficacy can be maintained throughout older adult life, allowing seniors to maintain lives as active and involved as younger adults (Bandura 1994). Furthermore, Grembowski *et al.* (1993) have found that self-efficacy is positively correlated to better mental and physical health in the elderly (Grembowski et al. 1993). Those with higher self-efficacy for health behaviors were more likely to partake in healthy behaviors, such as seeking preventive care and were healthier individuals. Finally, Shaheen (1999) found that individuals were more accepting of a transportation innovation after participating in a behavioral modeling study (i.e., watching a video that demonstrated individuals using a new service and successfully trying the innovation in

a trial clinic) (Shaheen 1999). The transit training class at Rossmoor draws on social cognitive theory and self-efficacy to encourage older adults to learn about public transportation use.

3. METHODOLOGICAL APPROACH

The Rossmoor Senior Adult Community, located in Contra Costa County in Walnut Creek, California, has been offering a transit training program to residents since 2005. In 2008, the community had a population of 9,305 residents with 6,678 residential units on 2,200 acres of land. Most residents have personal vehicle access and also can take the Rossmoor bus within Rossmoor and to connect to the County Connection bus system, which takes travelers to outside locations, including downtown Walnut Creek and the local Bay Area Rapid Transit (BART) District station.

Research is needed to address the increasing mobility needs and perceived public transit barriers of older adults. In this paper, researchers evaluate the effectiveness of the Rossmoor Senior Adult Community transit training class. The research methodology consists of two main components. First, researchers implemented questionnaires "before-and-after" six transit training sessions held in Summer 2007 to assess changes in public transit attitudes and usage on the same day of the class (before-and-after survey). In the second part, researchers conducted a survey with individuals who had previously taken the transit training to identify any longer-term changes in transit attitudes or use (what the authors call a "longitudinal survey").

Both surveys collected basic demographic data: age, gender, health, and income. The study populations had very similar *p*-values, ranging from 0.1 - 0.7. However, application of the Mann-Whitney U test to income data yielded a *p*-value of 0.05, indicating some significant differences between the two population's income levels. This is likely explained by the notably higher incomes of longitudinal study participants than the before-and-after survey population. Over 80% of participants from both groups were age 75 and older. Also, more than 80% were female. Over 85% reported having good, very good, or excellent health. Annual incomes of both study populations varied from below $10,000 US to more than $110,000 US. All participants graduated from high school, and most had at least some college or possessed higher degrees. Overall, participants were predominantly Caucasian.

Recruitment for the before-and-after and longitudinal surveys was conducted through flyers and advertisements in the local Rossmoor newspaper. Interested residents called the Rossmoor transportation office to enroll in the transit training study. To encourage study participation, respondents were entered into a $50 US gift card raffle.

3.1 Before-and-After Survey

The before-and-after survey was conducted in conjunction with six training sessions, held June through August 2007. Two sessions were conducted on a single training day of each month. Each questionnaire took approximately 15 minutes to complete. Forty-two residents participated in this study. Prior to the training, respondents completed a "before" questionnaire to assess their: 1) experience with different transportation modes, 2) current travel behavior, 3) public transit attitudes, 4) barriers to transit use, and 5) training program expectations. Next, they participated in the two-hour training, led by the transportation coordinator at Rossmoor. Immediately following the session, researchers administered the "after" questionnaire, which focused on potential changes in transit attitudes, knowledge gained through the training, and intended changes in travel behavior. The "after" survey also provided participants with the opportunity to evaluate the training program and to suggest improvements.

3.2 Longitudinal Survey

In the second study part, researchers administered a 15-minute questionnaire with prior training participants (individuals who had taken the class between six months to two years earlier) on August 15, 2007. Sixty-one participants completed the longitudinal survey. It included questions about travel behaviors prior to and after the training and perceived transit barriers, as well as an opportunity to comment on the training.

3.3 Study Limitations

This study relied on the self-reported answers of participants. Due to reasons of privacy, all participant surveys were anonymous, therefore making it impossible to verify if given information was correct. Furthermore, answers were based on respondent memories, and in the longitudinal survey this was a long time—between six months to two years earlier. Poor memory or a misunderstanding of the questions could have led to false answers. In addition, many participants took part in different training sessions, which may have lead to slightly different experiences.

Survey results may not be applicable to all older adult populations, since respondents are not as representative of the diversity across the U.S. (e.g., the majority of them were Caucasian). Furthermore, the study was conducted in an area where there is an established public transportation system within the community. In contrast, many seniors in the U.S. are unable to easily access transit, and therefore they may respond differently than the participants of this study. Finally, respondents were educated with at least a high school diploma, and many were still able to drive. They all lived within the older adult community of Rossmoor. Despite these limitations, this study provides many insights into the potential of transit training in encouraging older adults to use public transit.

4. RESEARCH RESULTS

A primary motivation of this study is to examine stated and actual behavioral changes following the Rossmoor transit training. The before-and-after and longitudinal surveys provided researchers with two methods for examining training impacts: immediate (intended response) and longitudinal (change over time). In this section, the authors present key findings from both study components including: 1) intended and actual travel behavioral changes, 2) public transit barriers, 3) transit information resources, and 4) transit training feedback.

4.1 Intended and Actual Behavioral Changes

4.1.1 Before-and-After Participants

Prior to training, the private automobile was the primary transportation mode for most participants (78.6%), followed by public transit (9.5%). Some reported equal use of both modes (2.4%). A majority of participants (69.1%) had not used the Rossmoor bus, while even more (76.1%) had never taken the County Connection bus prior to training. Some (9.5%) had even stopped driving but had not yet started using transit. Immediately following the training, 85.7% of participants stated that they intended to take transit more frequently in the future. The mode split of both study populations (before-and-after and longitudinal) prior to instruction was very similar; no statistical difference was found in their private auto use. The Two Sample Proportions test, however, showed that there was a difference in their transit use (p=0.0061). This is likely due to the greater proportion of before-and-after participants that used public transit as their primary mode prior to training.

4.2 Public Transit Comfort Level Changes

Respondents were asked a series of questions about their comfort level with taking the Rossmoor and County Connection buses prior to training. Results demonstrate that the course had a significant effect on transit comfort perceptions. The McNemar test for paired proportions demonstrated p-values less than 0.01 for the Rossmoor and County Connection bus comfort questions.

Table 1 reflects a positive shift in participant comfort levels for the Rossmoor and County Connection buses. For instance, dramatic increases were demonstrated for trips to the Walnut Creek BART station and downtown Walnut Creek via County Connection. There was a 52.4 and 57.2 percentage point increase for trips to BART and downtown Walnut Creek, respectively.

TABLE 1 Comfort Level Taking Rossmoor Bus and County Connection Bus Before-and-After Transit Training (N=42)

I Feel Comfortable Taking the Rossmoor Bus to:	**Before**		**After**		
	N	**%**	**N**	**%**	***p*[a]**
Not Applicable	1	2.4	0	0	1
Downtown Walnut Creek	10	23.8	33	78.6	<0.0001
I Do Not Know of the Rossmoor Bus	14	33.3	1	2.4	<0.0001
Safeway Shopping Center	20	47.6	39	92.9	<0.0001
I Feel Comfortable Taking the Country Connection to:	**Before**		**After**		
	N	**%**	**N**	**%**	***p*[a]**
Not applicable. I do not visit any of these destinations.	5	11.9	0	0	1
Medical appointments	10	23.8	22	52.4	0.004
Downtown Walnut Creek BART Station	12	28.6	34	81	<0.0001
Downtown Walnut Creek	14	33.3	38	90.5	<0.0001
I do not know this transit provider.	17	40.5	0	0	--

[a]McNemar test for paired proportions

4.2.1 Longitudinal Participants

Table 2 shows the primary transportation mode split of longitudinal participants before and following the training class. Although the private auto remained the primary mode for a majority of respondents after the training (67.2%), there was a significant decrease in private auto use (19.7 percentage points, with *p*-value equal to 0.001). In addition, there was a significant increase in public transit use (14.8 percentage points; p=0.006) after training. Increases in the number of participants reporting equal use of both modes (3.3 percentage points) were not significant.

TABLE 2 Primary Transportation Mode Split of Longitudinal Survey Participants (N=61)

Modes	Before Training	After Training	Percent Difference	*p*[a]
Private Auto	86.9%	67.2%	-19.7	0.001
Transit	1.6%	16.4%	14.8	0.006
Equal Use	11.5%	14.8%	3.3	0.75
Other	0.0%	1.6%	1.6	--

[a]McNemar test for paired proportions

Post-training results showed no change in Rossmoor bus ridership (p=1). However, County Connection bus usage increased significantly (27.9 percentage points; p=0.02). Significant increases were also demonstrated in County Connection bus ridership to Downtown Walnut Creek (p=0.002) and medical appointments (p=0.041). Ridership to the BART station increased slightly but not significantly (p=0.238).

4.3 Public Transit Barriers

Both the before-and-after and longitudinal survey participants were asked to respond to statements regarding barriers that may have prevented transit use. Not surprisingly, responses across both survey groups differ somewhat from the literature. The majority did not perceive many of the cited barriers. Most were neutral, disagreed, or strongly disagreed with statements that public transit was unsafe, expensive, inaccessible, and unfriendly across both populations. Most also disagreed with statements indicating difficulties entering the bus, reading bus schedules, purchasing tickets, and finding transit information. This is likely due to the availability of a dedicated community bus service and the unique city-suburban environment in which study participants live.

4.4 Public Transit Information Resources

Respondents who took part in the before-and-after study were asked questions about their confidence levels in locating public transit information (e.g., schedules, routes) prior to and immediately following training. As shown in Table 3, there was a significant increase in participant confidence with finding transit information after training among the before-and-after population (p=0.001). The number of those who felt very confident showed a 19.1 percentage point increase.

TABLE 3 Public Transit Information Resources: Changes in Before-and-After Survey Respondent Confidence and Longitudinal Survey Participant Use

Before-and-After Changes in Confidence Level (N=42)			
	Not Confident/ Somewhat Confident	Confident	Very Confident
Before	66.7%	30.9%	2.4%
After	33.3%	45.2%	21.5%
Overall p^a-value	0.001		
Longitudinal Changes in Use (N=61)			
	No Use	Use	
Before	49.2%	50.8%	
After	19.7%	80.3%	
Overall p^b-value	<0.0001		

[a]Wilcoxon Signed Rank Test
[b]McNemar test for paired proportions

Longitudinal survey respondents were also asked questions about their public transit information use prior to and after training (longer-term). As shown in Table 3, there is a significant increase in transit resource use after training. Prior to training, 50.8% used transit resources. After instruction, 80.3% used this information—revealing a 29.5 percentage point increase ($p<0.0001$).

4.5 Public Transit Training Feedback

Prior to transit training, participants were asked what motivated them to take the class and what they hoped to gain from it. Most respondents (85.7%) enrolled in it to plan for their future. Other reasons included the environment (e.g., air pollution), medical conditions, family member encouragement, and financial reasons (e.g., gasoline costs). Similarly, most longitudinal survey respondents (68.9%) enrolled in the course for the same reasons.

Ninety-three percent of before-and-after respondents found the training to be helpful or very helpful, and all but one reported that their expectations had been met. Over 70% of longitudinal participants recommended the class to friends. All participants found the informational handouts distributed during the training, bus tour, and knowledgeable instructor particularly helpful. Possible improvements include: expanding the training to include evening trips, indicating destinations of interest along the bus route, and providing more information on other public transit options (e.g., BART instruction).

CONCLUSIONS

In Summer 2007, researchers implemented surveys prior to and following the transit training sessions to evaluate the effectiveness of the Rossmoor class by assessing changes in perceptions and intended/actual behaviors following it. In addition, surveys were administered to residents who had taken the transit training course over the past two years to identify any longer-term changes in public transit use.

The transit class teaches participants about local public transportation options, information sources, and how to plan future trips. It also includes a bus tour of two major bus routes available to the community. The training draws upon social cognitive theory to encourage older travelers to learn about transit use (Shaheen 1999). The following is a summary of key findings from the before-and-after survey:

- A majority of respondents (85.7%) stated that they planned to take public transit more frequently in the future;
- A positive shift occurred in participant comfort levels taking the Rossmoor and County Connection buses to key destinations within the community (all p-values <0.004); and
- Participant confidence with finding transit information (e.g., schedules, routes) increased after training (p=0.001).

While the "before-and-after" survey relied on the reported intentions of participants to take public transit, the longitudinal survey allowed researchers to examine behavioral change following the training. Below is a summary of key findings from the longitudinal survey:

- After training, there was a significant decrease in private auto use as the primary transportation mode (p=0.001);
- Public transit use increased significantly (p=0.006);
- Rossmoor bus ridership showed no change (p=1), while ridership on the County Connection bus increased significantly (p=0.02); and
- Use of transit information resources increased significantly after training (p<0.0001).

Longitudinal survey findings are supported by feedback from the Rossmoor Transit Operator. Rossmoor bus ridership has increased slightly since August 2007. Furthermore, the Rossmoor Transportation Office has noticed a substantial increase in transit schedule and route inquiries, as well as training requests. Consequently, the Rossmoor transit operator has expanded the training program to include additional instructors and sessions (Gretchen Hansen, unpublished data, July 2008).

Study limitations reflect the innate restrictions of the training (e.g., self-selection bias), self-reported behaviors, and the lack of diversity in the sample population (e.g., primarily Caucasian participants). Thus, the survey results may not be applicable to all older adult populations. Despite these limitations, this study provides many insights into the potential of transit training in encouraging older adults to seek transit information and increase their familiarity and comfort with public transit.

Researchers recommend enhancing the transit training by implementing several improvements: 1) developing a follow-up class one month after the initial training, as older adults may need repeated sessions to strengthen their memories and understanding; 2) adding training on evening routes and other public transit options (i.e., BART and Muni); and 3)

providing uniformity across all sessions to ensure participants are provided with the same information and handouts. Other suggested improvements include: 1) media campaigns encouraging seniors to plan ahead; 2) area- or provider-specific websites that supply riders with reliable, up-to-date information about available transportation options (U.S. GAO 2004); 3) streamlining connectivity between transit providers to improve transfers and accessibility for older adults; and 4) offering more direct and evening routes.

Opportunities for further research include re-surveying the before-and-after participants to assess behavioral change and modal shifts over time. Additional research could include post-training focus groups where class feedback, travel behaviors, mode choice, and public transit barriers are probed in greater detail. In addition, researchers could conduct similar studies in both urban and rural areas, which may offer greater understanding into the transportation needs of older adults. Finally, research could be expanded to examine more diverse populations (e.g., different ethnic groups and income levels).

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Travel Training Program

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PRE-TRAINING QUESTIONS

Hello. The United Seniors of Oakland and Alameda County (USOAC) and the UC Berkeley Traffic Safety Center are conducting a survey today on the transit habits and public transit attitudes of older adults who have not yet participated in the travel training. The purpose of this survey is to identify transit habits, attitudes, and needs of older adults. Your answers will help us to understand your current knowledge of public transit, as well as provide us with insight into how public transit can better serve your needs.

We are not selling anything, and your responses will be CONFIDENTIAL. The survey will only require about ten minutes of your time.

The first section will help us to understand your current transportation habits

1) Do you currently drive?

☐ Yes
☐ No

2) Do you currently use Public Transportation?

☐ Yes
☐ No

3) What is your primary mode of transportation? Please check one.

☐ Personal auto
☐ Public Transit (bus, train etc.)
☐ Equal use of private auto and public transit
☐ Carpool
☐ Volunteer
☐ Other (please specify)_____

Travel Training Program is organized by USOAC and CIL.
This program is funded by a grant from ACTIA.

4) Please indicate the modes of transportation you use **one or more times per week**. Please check all that apply.

☐ Personal auto
☐ Carpool
☐ AC Transit bus
☐ Paratransit
☐ BART
☐ Bike
☐ Walk
☐ Other (please specify):_____

5) Currently what form of public transportation do you use?
Please check all that apply.

☐ AC Transit bus
☐ BART
☐ Paratransit
☐ Contra Costa County Connection
☐ SamTrans
☐ MUNI
☐ Other (please specify) _____
☐ None

6) How often do you use public transportation?

☐ Every day
☐ Once or more times a week
☐ Several times a month
☐ A few times a year
☐ Never

7) How many years have you been riding public transit?

☐ Less than one year
☐ 1 to 4 years
☐ 5 to 9 years
☐ 10 to 19 years
☐ 20 or more years
☐ Does not apply to me

8) What age were you when you first started riding public transit regularly?

☐ Under 10 years of age
☐ 10 to 19 years of age
☐ 20 to 29 years of age
☐ 30 to 39 years of age
☐ 40 to 49 years of age
☐ 50 to 59 years of age
☐ 60 to 69 years of age
☐ 70 to 79 years of age
☐ 80 years of age or older
☐ Can not remember
☐ Does not apply to me

9) Why **do** you take public transit? Please check all that apply.

☐ Environmental reasons
☐ Gas prices
☐ Financial reasons
☐ I have a medical condition that prevents me from driving
☐ I take transit with a friend
☐ A family member wants me to take transit
☐ A friend wants me to take transit
☐ Transit is convenient and easy to use
☐ Other (please specify)_____
☐ I do not ride public transit

If you **do not** use public transit please identify why:

_____

_____

10) Do you have concerns regarding public transit? Please check all that apply

☐ Lack of information regarding fares
☐ Lack of information regarding schedules
☐ Lack of information regarding routes
☐ Possibility of not obtaining a seat on the bus
☐ Bus drivers are not helpful or friendly
☐ Price of public transit are too high
☐ Public transit is not clean
☐ I am concerned about crime on the buses
☐ I am concerned about crime at bus stops
☐ I do not feel safe on public transportation
☐ It takes too long
☐ Public transit is not reliable
☐ The schedules do not work for me
☐ Taking the bus is not convenient for me
☐ I can not read the bus schedules and maps because it is too small and confusing
☐ Bus stops and transit stations are not comfortable
☐ Fear of falling while on the bus
☐ There is not enough seating at bus stops and transit stations
☐ There is not enough lighting at bus stops and transit stations
☐ Bus stops and transit stations are isolated and unpopulated
☐ Bus stop and transit stations are not in convenient locations
☐ It is hard to get to the bus stop and transit stations because of street and bus stop design
☐ I have a health condition that keeps me from riding public transit
☐ Other (please explain):

_____
_____
_____
_____

Travel Training Program is organized by USOAC and CIL.
This program is funded by a grant from ACTIA.

11) Why did you enroll in the transit training class? Please check all that apply.

☐ I want to use public transit because I am concerned about environmental pollution
☐ I have to use transit because I have no other choice
☐ I want to use public transit because I can't afford a car
☐ A family member or friend encouraged me to attend
☐ A family member has a medical condition that impacts their ability to drive
☐ I have a medical condition that impacts my ability to drive
☐ I am planning for the future
☐ I do not recall
☐ Other (please specify)
_____

12) Where did you hear about the Travel Training Program?

☐ Family
☐ Friend
☐ Senior Center
☐ Other (please indicate): _____

This second Section will help us to understand how much you currently know about riding public transportation

13) Do you know how to find the correct bus line or train to take for your destination?

☐ Yes (please explain) _____
☐ No

14) Do you know how to find out the frequency of your bus/train route?

☐ Yes (please explain) _____
☐ No

15) Do you know that there is a difference between day-time transit frequency versus evening and weekend transit frequency?

☐ Yes (please explain) _____
☐ No

16) What sources of information do you currently use to access transit? Please check all that apply.

☐ Ask a family member or friend
☐ Travel training class
☐ Paper schedule
☐ Internet (such as AC Transit website, BART website, 511 website)
☐ Brochures
☐ 511 transit & traffic information phone line or website
☐ Other (please specify): _____
☐ Not applicable. I do not use public transit

17) Do you know the cost of riding public transit?

☐ Yes (please indicate) _____
☐ No

18) Do you know where to purchase tickets/passes for public transit?

☐ Yes (please indicate) _____
☐ No

19) Do you know about senior passes for public transit?

☐ Yes (please explain) _____
☐ No

20) Can you identify where the best seats for seniors are?

☐ Yes (please indicate) _____
☐ No

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21) Do you know how to request a stop on public transit?

☐ Yes (please indicate) _____
☐ No

22) Can you identify emergency exits on public transit?

☐ Yes (please explain) _____
☐ No

The following questions will provide us with basic demographic data.

1) Are you…

☐ Female
☐ Male

2) What is your age?

☐ 54 or younger
☐ 55 to 64
☐ 65 to 74
☐ 75 to 84
☐ 85 or older

3) Do you live alone?

☐ Yes ☐ No

4) Overall, how would you rate your current health status? (please check one)

☐ Poor ☐ Fair ☐ Good ☐ Very Good
☐ Excellent

5) Do you have health concerns/anxieties/fears that impact your decision and/or ability to ride public transit?

☐ Yes (please explain)
_____
_____

☐ No

6) What is your main ethnic or racial heritage? (please chose one)

☐ Black/African American
☐ Hispanic or Latino
☐ Native American
☐ White/Caucasian
☐ Asian
☐ Pacific Islander
☐ Other or Mixed Heritage (please specify):_____
☐ Decline to answer

7) Please indicate your highest level of education completed:

☐ Grade (Elementary) School
☐ Some High School
☐ Graduated High School
☐ Associate's Degree
☐ Some College
☐ Bachelor's Degree
☐ Some graduate school
☐ Master's Degree
☐ Ph.D. or higher
☐ Other (please specify): _____
☐ Decline to answer

8) What is your total annual family income, including retirement and/or Social Security benefits?

☐ less than $10,000
☐ $10,000- 19, 999
☐ $20,000- 29, 999
☐ $30,000- 39, 999
☐ $40,000- 49, 999
☐ $50,000- 59, 999
☐ $60,000- 69, 999
☐ Over $70, 000
☐ Decline to answer

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POST TRAVEL TRAINING SURVEY

Hello. The United Seniors of Oakland and Alameda County (USOAC) and the UC Berkeley Traffic Safety Center are conducting a survey today on the transit habits and public transit attitudes of older adults who have participated in the travel training. The purpose of this survey is to identify transit habits, attitudes, and needs of older adults. Your answers will help us to improve the travel training program, as well as provide us with insight into how public transit can better serve your needs.

We are not selling anything, and your responses will be CONFIDENTIAL. The survey is will only require about ten minutes if you choose to respond.

The first section will help us to understand how much you now know (after participating in the travel training course) about riding public transportation

1) Do you know how to find the correct bus line or train to take for your destination?

☐ Yes (please explain) _____
☐ No

2) Do you know how to find out the frequency of your bus/train route?

☐ Yes (please explain) _____
☐ No

3) Do you know that there is a difference between day-time frequency versus evening and weekend frequency?

☐ Yes (please explain) _____
☐ No

4) After taking the travel training course, now what sources of information ***will you use*** to access transit? Please check all that apply

- ☐ Ask a family member or friend
- ☐ Travel training class
- ☐ Paper schedule
- ☐ Internet (such as AC Transit website, BART website, 511 website)
- ☐ Brochures
- ☐ 511 transit & traffic information phone line or website
- ☐ Other (please specify): _____
- ☐ Not applicable. I do not use public transit

5) Do you know the cost of riding public transit?

- ☐ Yes (please indicate) _____
- ☐ No

6) Do you know where to purchase tickets/passes for public transit?

- ☐ Yes (please indicate) _____
- ☐ No

7) Do you know about senior passes for public transit?

- ☐ Yes (please explain) _____
- ☐ No

8) Can you identify where the best seats for seniors are?

- ☐ Yes (please indicate) _____
- ☐ No

9) Do you know how to request a stop on public transit?

- ☐ Yes (please indicate) _____
- ☐ No

10) Can you identify emergency exits on public transit?

- ☐ Yes (please explain) _____
- ☐ No

11) Did you feel a sense of camaraderie from your peers that benefited your learning experience?

- ☐ Yes (please explain) _____
- ☐ No

12) The perfect length for this travel training would be (please choose one):

- ☐ 1 day
- ☐ 2 days
- ☐ 3 days
- ☐ 4 days (what you participated in)
- ☐ more than 4 days
- ☐ Other (please indicate) _____

The following section will provide us with information regarding concerns and barriers that you may come across in accessing public transit.

13) Please indicate your top three concerns regarding public transit

- ☐ Seating
- ☐ Driver friendliness and sensitivity
- ☐ Cost of transit
- ☐ Cleanliness and appearance
- ☐ Crime on the bus
- ☐ Crime at the bus stop
- ☐ Travel time
- ☐ Reliability
- ☐ Getting lost
- ☐ Convenience
- ☐ Readability of transit schedules
- ☐ Readability of transit maps
- ☐ Other _____

14) I am concerned with **obtaining seating** while on public transit

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

15) I am concerned with bus **driver friendliness and sensitivity**

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

16) I do not have a **good knowledge of transit routes** and how to find more information

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

17) I am concerned with the **cost of transit**

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

18) I am concerned with the **cleanliness and appearance** of transit vehicles

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

19) I am concerned with **crime** on the transit vehicle

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

20) I am concerned with **travel time** while riding public transit

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

21) I am concerned with how to correctly **read the transit schedules**

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

22) I am concerned with how to correctly **read the transit route maps**

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

23) I have concerns regarding the **reliability** of transit systems

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

24) I am concerned that I may **get lost** while riding public transit

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

25) Public transportation is **convenient** for me to use

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

26) I am concerned with **falling** on the bus.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

The next section will be specifically regarding barriers that you may face at bus stops and transit stations

27) I am concerned with **seating areas and benches** at bus stops and transit stations

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

28) I am concerned with **lighting levels** at bus stops and transit stations

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

29) I am concerned with **crime** at bus stops and stations

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

30) I am concerned with the lack of **emergency phones** available at bus stops and stations

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

31) I feel more comfortable when **other people are also waiting** at the bus stop or transit station

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

32) I am concerned with bus stop and transit station **accessibility**

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

33) I am concerned that there are no **retail vendors and stores near** the bus stops and stations

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

34) I am concerned with **accessibility regarding *getting to*** bus stops and transit stations

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

35) I am concerned with the **readability of transit route maps and schedules**

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
☐	☐	☐	☐	☐

36) If you are not currently using public transportation, what if anything would encourage you to ride public transit? Please explain:

_____

_____

This following section is an evaluation of the Travel Training's quality. Your answers will help us further improve Travel Training.

1) Was the **AC Transit training** helpful and informational? Please explain:

_____

_____

2) Do you have any comments or suggestions on how to improve the **AC Transit training**? Please explain:

_____

_____

3) Was the **BART training** helpful and informational? Please explain:

_____

_____

4) Do you have any comments or suggestions on how to improve the **BART training?** Please explain:

_____

_____

5) Do you have any comments or suggestions about the **overall training**? Please explain:

_____

_____

Evaluation of an Urban Travel Training for Older Adults

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ABSTRACT

The size of the aging population in the United States is increasing, and transportation is critical to maintaining older adults mobility, independence, and quality of life. Travel training programs designed to increase individual knowledge are one way to encourage older adult use of fixed-route transit and improve the transportation options for older adults. The analysis conducted in this paper explores characteristics of travel-training participants in Alameda County, California in 2007-2008 and their knowledge and concerns regarding public transit. Specific issues addressed include transit habits, degree of increase in knowledge after participating in the training, and factors that predict training participation. Participants in this study represent a diverse group of older adults with a broad range of transportation experience and knowledge. After participation in the travel training course, participants showed an increase in knowledge of local public transit and how to access transit information independently. The study identifies *currently driving* as a predictive positive predictive factor for participating in the travel training course. Future travel training courses should make efforts to recruit current drivers who may wish to plan for their future mobility needs by becoming more familiar with public transit options.

INTRODUCTION

The aging of the baby boomer generation in the U.S. presents pressing issues for transportation planners and health policy makers. One of the many vital needs of this population is effective, accessible and older adult-sensitive transportation. Older adults face serious health and social challenges when they must give up their driver's licenses. Public transit may provide older adults with greater mobility options, but it is generally underutilized, even if it is available. To understand the reasons for this lack of use, it is necessary to better understand older adults' transit habits and the barriers that inhibit their use of transit, as well as how to overcome these barriers. Many transportation agencies are aware that public transit may provide a useful alternative to driving for older adults. Research specific to older adults is needed to explore how public transit can become a viable transportation option for this population.

In 2006, the UC Berkeley Traffic Safety Center, with funding from the California Department of Transportation, began a study to identify barriers to older adults' use of public, fixed-route transit and to evaluate interventions designed to eliminate these barriers. The aim of this research has been to identify the barriers that older adults face in accessing public transportation in the urban San Francisco East Bay Area and to explore travel training as a social marketing technique. The first phase examined older adults' transit habits and attitudes by conducting a survey (N=259) at senior activity centers in Alameda County, California. The results of this study were presented at Poster Session 551 at the 87th TRB Annual Meeting (*1*). The findings from the first phase echoed current literature, confirming that older adults do not have sufficient familiarity with, and knowledge of, public transit to successfully use it as a primary mode of transportation. The second phase consisted of an evaluation of a travel training program that educated older adults regarding public transit and familiarized them with how to successfully use it.

This paper discusses the results of the travel training evaluation phase of the study, and of an evaluation of the program to date. The results will enable transit and senior services agencies, planners, and advocates to better understand and serve older adults' public transit needs.

BACKGROUND ON OLDER ADULT MOBILTY AND TRANSIT HABITS

The primary mode of transportation for older adults is driving; public transportation use remains very low. Currently, only 5 percent of older adults use public transportation as their primary mode of transportation (*2*). Although many older adults continue to use private cars as their main mode of transportation, the portion of older adults who also rely on public or non-private modes of transportation is growing. Public transportation is a vital source of mobility for older adults who cannot or choose not to drive (*3, 4*). For many older adults, public transit helps them meet their medical/health and social needs (*5*).

Older-adult public transit utilization rates are likely to increase as this population grows and other forms of transportation become increasingly expensive. Public transit agencies must focus on making transit more "older-adult friendly," a change that would boost ridership and meet the transportation needs of older adults (*3*). Transit systems must take into consideration the needs of older adults in urban, suburban, and rural communities.

In future years, older people will most likely be healthier, better educated, and more active than their present counterparts. They are also likely to travel more frequently to a wider range of destinations and be more car dependent (*6, 3*). Trip rates and distances have increased significantly for all groups of elderly people, and as health and activity levels improve, they will be more likely to pursue a range of activities to meet a more active lifestyle, and need more

transportation access (*3*). Older adults who are accustomed to private automobile travel will demand high quality public transportation. The more flexible the public transportation service, the smoother the transition from the private car to public transit will be for older adults.

Older adults who ride public transportation are typically low-income, minority, and female (*7, 3*). Spain (1997) and Rosenbloom (2002) point out that women are the majority of the elderly population, and are less likely in the coming generations to have others to care for them or the resources to meet their transportation needs. In addition, older adult minorities report having more limitations to their mobility and take fewer trips than their white counterparts (*8, 10*).

The U.S. Government Accountability Office (2004) has identified two types of transportation purposes: transportation that is necessary (medical and health needs), and that is life-enhancing (social and recreational activities). It has been shown that older persons who are primarily dependent on public transportation (as opposed to private vehicle use) are less able to meet health care and social needs, and have high rates of social isolation (*7, 12*). Bailey (2004) found that older adult non-drivers make 15 percent fewer trips to the doctor and 65 percent fewer social trips than drivers. Studies show that access to transportation promotes quality of life and increases life satisfaction by providing access to social and other activities (*14*). Older adults who maintain active lifestyles and are mobile are healthier and live longer than their transportation-disadvantaged counterparts, who are more likely to suffer from depression and isolation (*15*). Staying active and mobile allows people to engage with their social and physical environments, helping to reduce social isolation and increasing quality of life.

To identify barriers older adults face in using public transportation, their knowledge of and familiarity with public transit must first be understood. Such barriers are based on lack of information, lack of knowledge, lack of prior or regular usage, and/or lack of training on how to access public transit. Knowledge-based barriers can be addressed by social marketing, consumer education and training on how to use public transit services. Travel training programs that instruct older adults on how to ride transit can help address the knowledge and familiarity barriers for older adults. Video travel training instruction has been shown to positively affect older adult's habits when going to the destinations shown in the video. Participants also reported that they planned to increase their use of internet-based transit information after receiving video instruction. (*16*). A travel training program in British Columbia found that participants who completed the program used the bus more frequently than those who did not engage in the travel training program (*17).* This evidence suggests that travel training programs may provide a realistic and effective way of encouraging and supporting the use of public transit on the part of older adults.

Further studies are needed on the specific transportation needs of older adults and what works best for current and future older adult cohorts. Improvements to older adult public transit cannot succeed without taking the specific concerns of the elderly into consideration (*7, 18, 2, 19, 15, 11*). This study addresses the knowledge and familiarity needs of this population.

RESEARCH

Overview

Researchers conducted an informal search for public transit activities that were designed to educate and familiarize older adults in the urban East San Francisco Bay Area with public transit. This search identified one existing project, operated by a local senior-oriented nonprofit

organization, United Seniors of Oakland and Alameda County (USOAC), with funding from the Alameda County Transportation Improvement Agency. The Traffic Safety Center (TSC) partnered with USOAC to evaluate the travel training course and survey older adults who participated in the course on their transit knowledge and concerns.

The course was primarily designed for older adults who were thinking about using public transit, or needed to begin transitioning from the private automobile to using public transit as their primary mode of transportation. The travel training programs took place at local senior activity centers that were primarily frequented by an older adult population.

The training consisted of two components: a workshop-based training and a field-based training. The curriculum for the course was developed by Nelson/Nygaard Consulting Associates. The workshop-based training was held over three days. The first workshop introduced the types of local public transit available in the area and assessed the groups' understanding of public transit. The second workshop introduced curriculum training materials, including the fares, schedules, tickets, route information, etc. on the two primary public transit systems in Alameda County: Alameda and Contra Costa County Transit (AC Transit) bus system and the Bay Area Rapid Transit (BART) subway system. The third workshop reviewed the materials with participants, answered participants' specific questions, and concluded the workshop-based training. For the field-based training component, participants and training instructors practiced riding both AC Transit and BART.

Research Design and Methodology

The travel trainings were conducted throughout the urban East Bay Area. The trainings took place at senior centers in Oakland, Berkeley, and Emeryville. USOAC and the TSC researchers recruited participants by talking to program directors at the senior centers, distributing flyers at senior activity centers, and placing notices in the centers' monthly newsletters.

A comprehensive paper-based qualitative and quantitative survey was administered to participants both pre- and post-training. The survey was intended to measure participants' knowledge of public transit as well as their own comfort levels, attitudes, concerns, and degree of familiarity with riding public transit. The survey format provided for multiple-choice, scaled, and fill-in-the-blank responses. Participants were asked to complete the pre-survey on the first day of training and the post-survey on the third day of training. The research team obtained human subjects approval for this study.

On the days the surveys were taken, USOAC staff and the researchers distributed the survey and a consent form to travel training participants. As an incentive, the individuals who completed both pre- and post-surveys received a $20 a gift card to Target, a national chain "big box" store. They were not obligated to take the survey and were in no way pressured into doing so. If an individual agreed to participate, he or she was provided a paper survey and pen/pencil.

Participants completed the surveys of their own accord with no time restrictions; the survey was estimated to take no more than 10-15 minutes to complete. If a participant required assistance due to language, vision, or physical difficulties, USOAC staff or a researcher assisted him/her by reading the questions and completing the appropriate answer choice, based on the participant's response. The surveys were then collected, coded, and entered into a Microsoft Excel database.

Types of Analysis

Questions and answers to both parts of the survey were coded for analysis. Only affirmative, legible responses were accepted and coded. Nominal and ordinal responses were assigned a number and coded accordingly. Ratio responses were coded along a value of responses. Non-responses to any particular question were coded a "non-response" ("888" or "999" suffix) and excluded from the analysis.

Survey information was entered into Microsoft Excel for initial data compilation, and was then imported into Statistical Package for the Social Sciences (SPSS) for data analysis. The four analysis types presented in this report are frequencies, t-test, crosstabs, and binary logistic regression.

Results

Results included survey responses from a total of 53 participants from the four travel trainings that were conducted. Survey data was gathered for all participants. While participants did not consistently answer all questions on the survey, they did answer most questions. For this analysis, only the valid responses (excluding missing variables) were calculated in the sample in order to capture the relevant data pertaining to each question. (N=50, unless otherwise noted.)

Demographics and Characteristics of the Travel Training Participants

The majority (74 percent) of participants in the travel training program were women. While there were a few participants under the age of 65, 78 percent (N=48) were 65-84 years of age. Fifty-one percent (N=49) of the participants were educated with at least a Bachelor's Degree. The three prominent ethnic/racial categories (N=49) were White/Caucasian (41 percent), Black/African American (31 percent), and Asian (14 percent). Eighty-six percent of the participants stated that their income was lower than $30,000. Sixty-eight percent (N=38) stated that they lived alone. Seventy-six percent of participants stated that their self-reported health status was good, or very good, and 44 percent (N=46) reported that they had health concerns or anxieties that affected their decision and/or ability to ride public transit.

Travel Training Participation

Participants enrolled in the travel training course for a variety of reasons. The most frequently-stated reason was that they were planning for their future (56 percent). Other reasons included: they felt they had no choice (42 percent), they could not afford a car (28 percent), environmental concerns (26 percent), a medical condition that impacted their ability to drive (20 percent), or they were encouraged to attend by a family member or friend (14 percent). When asked about how they learned of the travel training program, 84 percent of participants said they had heard about the travel training program through the senior activity centers.

Primary Modes of Transportation and Demographics

While over half (58 percent) of the participants were current drivers, only 37 (N=49) percent use a personal automobile as their primary mode of transportation. 45 percent (N=49) used public transportation as their primary mode of transportation, and 42 percent use transit one or more times a week. 84 percent stated that they do use public transit (although, not as their primary mode and it should be noted that the East Bay Area has a variety of transit options, and many people use the Bay Area Rapid Transit to go to San Francisco on occasion).

The majority of the participants who used a personal automobile as their primary mode of transportation were female (67 percent). Thirty-three percent of all drivers were aged 55-64 and 50 percent were aged 65-74. Almost half (46 percent) of drivers lived alone. Primary drivers were from diverse ethnic/racial groups. Thirty-nine percent were Black/African American, 39 percent were White/Caucasian, 11 percent were Asian, 6 percent were Hispanic/Latino, and 6 percent declined to answer. Sixty-one percent of drivers reported they did not have concerns that would affect their use of public transportation.

Of the participants who used public transit as their primary mode of transportation, 71 percent were female, 29 percent were aged 65-74, 57 percent were aged 75-84, 74 percent lived alone, 67 percent self-reported good or very good health status, 53 percent did not have concerns/anxieties/fears that affected their use of riding public transit, 30 percent were Black/African American, 50 percent were White/Caucasian, 15 percent were Asian and 5 percent declined to answer.

There were some notable differences between primary automobile users and transit riders. Automobile users tended to be younger than transit users. Public transit users reported living alone at much higher rates (74 percent vs. 46 percent for primary automobile users). Primary public transit users were more educated than primary automobile users. Thirty-five percent of public transit users had completed a master's degree, and 28 percent of primary automobile users had completed some college. Seventy-five percent of public transit users had an income of $29,000 or less.

Knowledge, Familiarity, and Concerns Regarding Public Transit

In order to determine whether or not the travel training program was achieving its goal of increasing knowledge on how to confidently ride public transportation, knowledge was measured both before and after participating in the course (See table 1).

TABLE 1 Increase in Participant Knowledge

Survey question	"Yes" on Pre-survey	"Yes" on Post-survey
Know how to find the desired transit line	63% (*N*=48)	96% (*N*=44)
Know how to find frequency of desired transit line	51% (*N*=49)	93% (*N*=44)
Know the difference between day/night frequencies	61% (*N*=49)	96% (*N*=44)
Know the cost of riding public transit	60% (*N*=48)	91% (*N*=44)
Know where to purchase tickets for public transit	55% (*N*=47)	98% (*N*=45)
Know about senior passes	76% (*N*=49)	100% (*N*=44)
Know how to identify best seats for seniors	63% (*N*=49)	98% (*N*=45)
Know how to request a stop	65% (*N*=49)	98% (*N*=45)
Know how to identify emergency exit	57% (*N*=47)	98% (*N*=45)

A paired sample *t-test* on the mean knowledge was conducted on the pre-test compared to the mean sample of the post-test. There was a significantly positive association in the increase in participant knowledge after completion of the travel training course with $p<.001$.

In addition to increased knowledge, participants reported that they planned to increase use of all independent modes of accessing transit information, including paper schedules, the internet, brochures and local 511 services available both by telephone and internet. This increased independence could explain the reduction in the percentage of participants who reported that they were likely to ask a family member or friend for transit information.

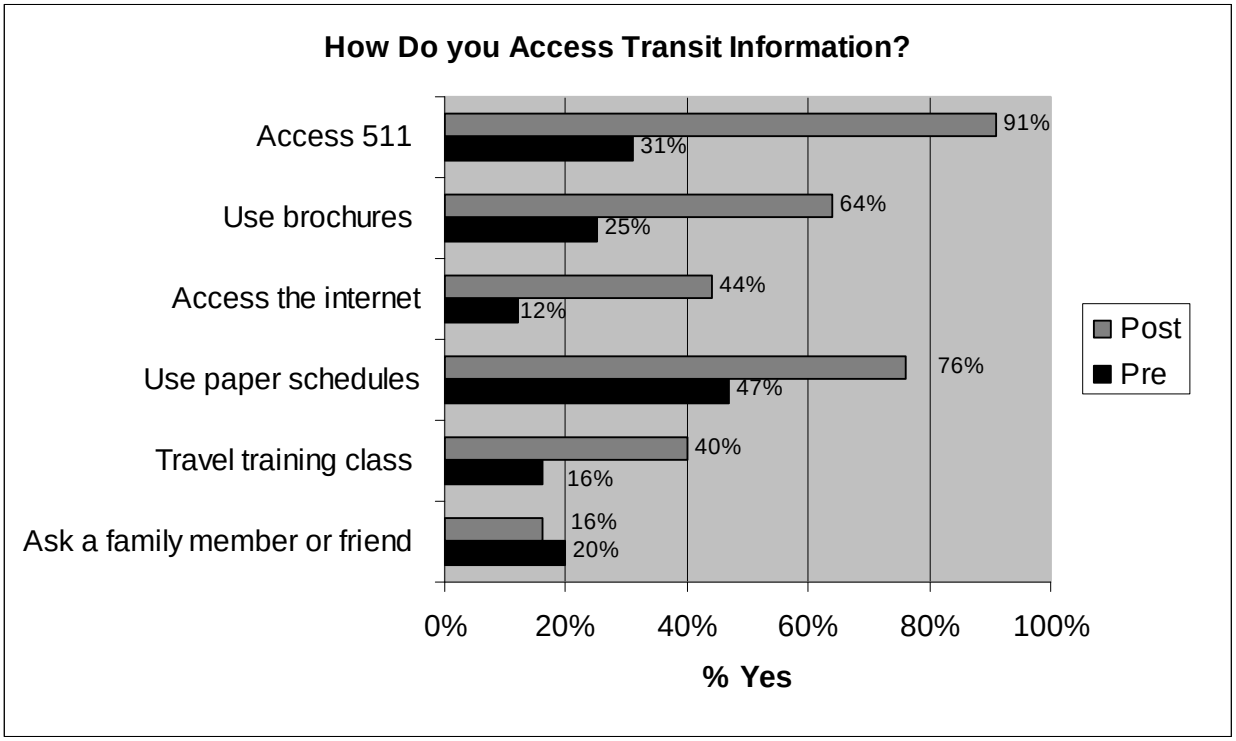

FIGURE 1 Accessing transit information pre- and post-training.

Participant's Concerns Regarding Accessing Public Transportation

Participants were asked if they had any concerns regarding accessing or using public transit. The five most common concerns included: not having enough information regarding public transit routes (61 percent), lack of information regarding schedules (51 percent), concerns with public transit taking too long (45 percent), a fear of falling on the bus (40 percent), and concerns with crime at the bus or transit stop (39 percent).

For primary auto users only, the six concerns with the highest frequency included: a concern with public transit taking too long (78 percent), lack of information regarding routes (67 percent), lack of information regarding schedules (61 percent), lack of information regarding fares (50 percent), concerns with crime on the bus (50 percent), and concerns with public transit not being convenient (50 percent).

Primary public transit users reported a slightly lower level of concerns, including: fear of falling on the bus (60 percent), lack of information regarding routes (46 percent), lack of information regarding schedules (36 percent), not being able to obtain a seat on transit (36 percent), and crime at the bus stop (36 percent).

For Future Travel Training Programs

In an effort to understand why older adults enrolled in the travel training program, participants were surveyed about their reasons for enrolling. Planning for the future was the most common reason for enrollment (56 percent). Participants citing this as the reason for enrollment were more likely to be current drivers than to use public transit as their primary mode of transportation. Regression analysis revealed a significant association between *currently driving* and *planning for the future* ($p = 0.002$).

DISCUSSION AND IMPLICATIONS

Transportation is critical to health and well-being. Central to healthy aging, it allows people to maintain mobility, independence, and quality of life. Travel training programs to increase individual knowledge are one way to encourage older adult use of fixed-route transit, thereby increasing the transportation options for seniors. This analysis describes the results of a travel training program designed to increase knowledge and familiarity of fixed-route transit in the urban East Bay. Participants in this training voluntarily enrolled. This recruitment procedure potentially introduces selection bias, as people who use transit, or want to ride transit, may enroll in the training at higher rates than those who are adverse to transit. Additionally, the East Bay is a transit-rich area so many participants are likely more familiar with transit than they would be in less transit-rich areas. These potential biases make the findings of this research less generalizable than if a randomized population had been recruited. However, the findings can provide insight into older adult transit attitudes and use, given the availability of transit.

Contrary to the literature, this study found that many of the older adults in the East Bay area use public transit as their primary mode of transportation, and almost all of the participants use public transit sometimes. Despite having prior experience with public transit, participants enrolled in the course, suggesting that older adults want additional experience with transit. While many participants came with preexisting knowledge and familiarity, it should not be assumed that the general population of older adults has prior knowledge and experience with transit. Individual travel training programs must assess the transit knowledge of their participants prior to the training, as well as be prepared to instruct individuals with varying levels of transit familiarity. Further, as mentioned earlier, this study was conducted in an urban area, with an existing transit infrastructure. There are many areas in suburban, rural, and some urban, communities that need an infrastructure before travel training can become a viable intervention.

Understanding the demographics and characteristics of travel training participants is important for any program evaluation and for future outreach plans. The older adults who participated in the East Bay Area travel training course were ethnically/racially diverse. All the participants in this study self-reported having fairly good health status. However, this may also be the result of self-selection for participation bias. Older adults with health concerns may have more difficulty engaging in a travel training course and/or may have difficulty during the course and would likely not choose to participate. In reality, public transit may not be a feasible option for older adults with health issues. An assumed prerequisite to riding public transit is that one is healthy and mobile enough to be able to walk to the bus, step on the bus, and get into a seat or stand.

Additionally, consistent with the literature, women living alone were predominant within this population and may be the primary users of public transit within the older adult population. This population, by virtue of living alone is at elevated risk of social isolation, and is therefore

particularly important to reach in programs such as travel training. The training itself fostered a sense of camaraderie from the participants through the group learning process. This camaraderie can assist in older adults increasing their social networks and reducing the risk for social isolation.

This study found that current drivers were more likely to attend the training than non-drivers, suggesting that older drivers are thinking about future transportation options in the event that they lose their driving privilege. Focusing on older drivers as potential candidates for travel training courses is an important strategy to prevent the negative consequences associated with driving cessation or reduction, and subsequent decreased mobility. If current older drivers are trained on how to ride public transit before they *need* to use it, they will be increasingly familiar with it, potentially reducing the distress, discomfort and "dis-ease" caused by driving cessation.

Recruitment is possibly the single most important strategy for travel training programs. Travel training and other public transit encouragement programs and policies must ensure that they are reaching older adults who are most vulnerable. Vulnerable older adults include those who no longer drive, are at risk of driving cessation, live alone, have poor health status, have modest incomes, and older women. This can be challenging, as many of these older adults may already be socially isolated. The travel training reported here recruited participants on a voluntary basis through flyers and word-of-mouth at Senior Activity Centers. Senior Activity Centers are an opportunistic place to begin recruitment for a travel training program, but are by no means the end to recruitment. This strategy was effective in recruiting the desired number of participants in its initial implementation, but did not address reaching socially isolated older adults. There are many opportunities to recruit older adults who may not already be accessing community services. Strategies to recruit older adults may include partnering with the local Department of Motor Vehicles, Medical providers, newsletters, TV/Radio advertisements, and having adult children refer their parents. All these entities are allies in maintaining older adult mobility.

Organizational support and funding are critical to understanding the senior population in individual communities and increasing ridership. Transit agencies (from planning departments to drivers/operators) need to be familiar with the needs and concerns older adults have when accessing public transit. Senior services agencies and transit agencies are natural partners in conducting transportation planning for older adults. Departments of Motor Vehicles are central repositories of potential transportation resources available to older adults. Interdisciplinary partnerships and collaborative efforts can be extremely beneficial to any travel training program, not only to share information and adequately respond to the needs of the older adult community, but also in pulling resources. Working collaboratively can assist program planners and policy makers in obtaining funding, or advocating for funding that supports older adult mobility.

CONCLUSION

Transportation is critical to older adult mobility and independence, and consequently affects quality of life and overall health. In preparation for the growing older adult population, it is imperative to understand the transit needs and habits of older adults. Driving is the most prevalent mode of transportation for current older adults, but many older adults' driving abilities will at some point become limited or will cease altogether. Before older adults become stranded due to driving cessation, other transit options need to be identified, developed, and widely accepted by the general population. While travel training has been identified as a successful option in knowledge gain and familiarity for older adults - it remains only *one* option for older

adult independent mobility. Other options that address issues of mobility beyond the individual's knowledge and responsibility need to be addressed. Areas to be addressed include environmental barriers that affect mobility, lack of transit infrastructure, social/cultural norms that romanticize the private automobile, and policies that neglect to ensure that transit options are realistic and sensitive to older adults.

All levels of barriers that older adults face in accessing public transit should be identified and eradicated. These include built-environment barriers, city and regional planning barriers, transit access, technological barriers, and policy barriers. Strategies such as creating older adult transit-oriented livable communities that provide easy access to transit as well as other daily needs address many of the identified barriers at the same time as creating communities that are older adult friendly. In an age of global climate change, increasing gas prices, and environmental consciousness, transit use should be promoted among people of all ages before they become public transit dependent.

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Evaluation of an Urban Travel Training for Older Adults

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January 12th , TRB 2009

Presentation overview

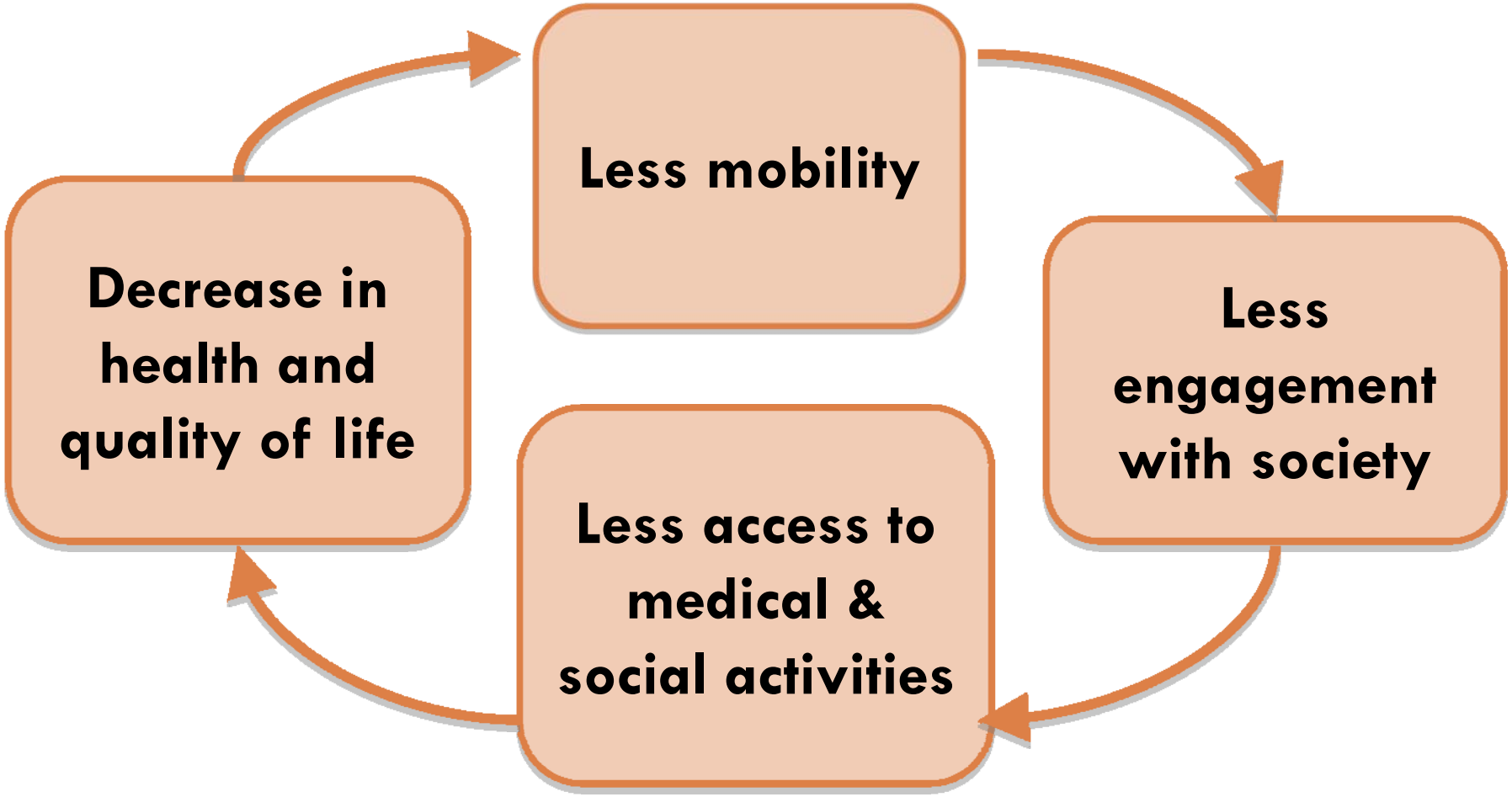
- Background
- Purpose of research
- Study overview
- Survey summary
- Travel training results
- Lessons learned
- Conclusion

Background

- Growing older adult population nationwide (12% in 2000 to 20% by 2050)
- Transportation provides access to essential goods and services (medical, social, etc.)
- Many older adults will choose or opt to cease driving
- Driving cessation is tied to physical and mental health
- Transit must respond to & be appropriate for older adults

Background

Without transportation…

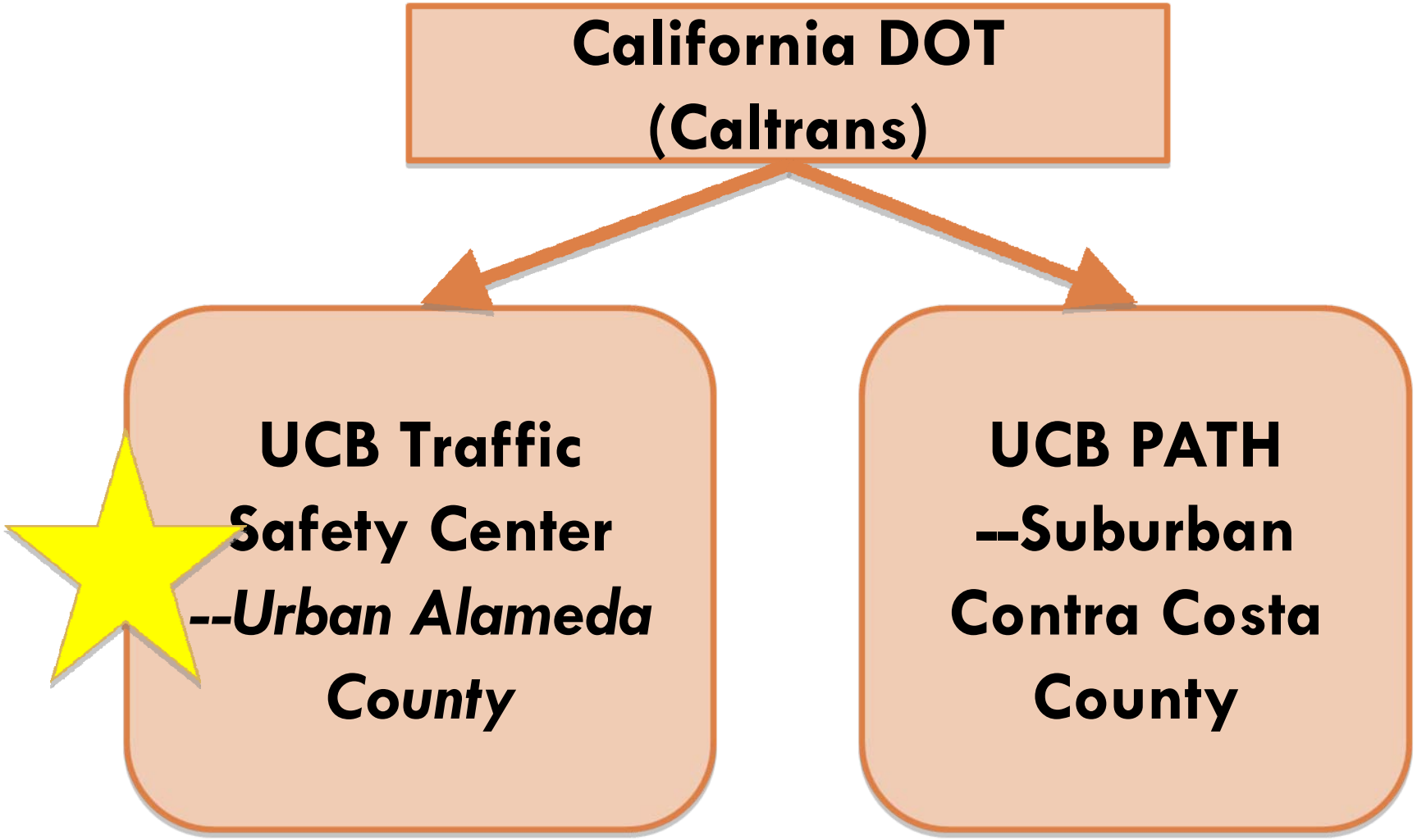


Purpose of this research

GOAL: Expand transportation options for older adults

- **Determine and address barriers to using public transit**
- **Increase familiarity of public transportation**

Study overview

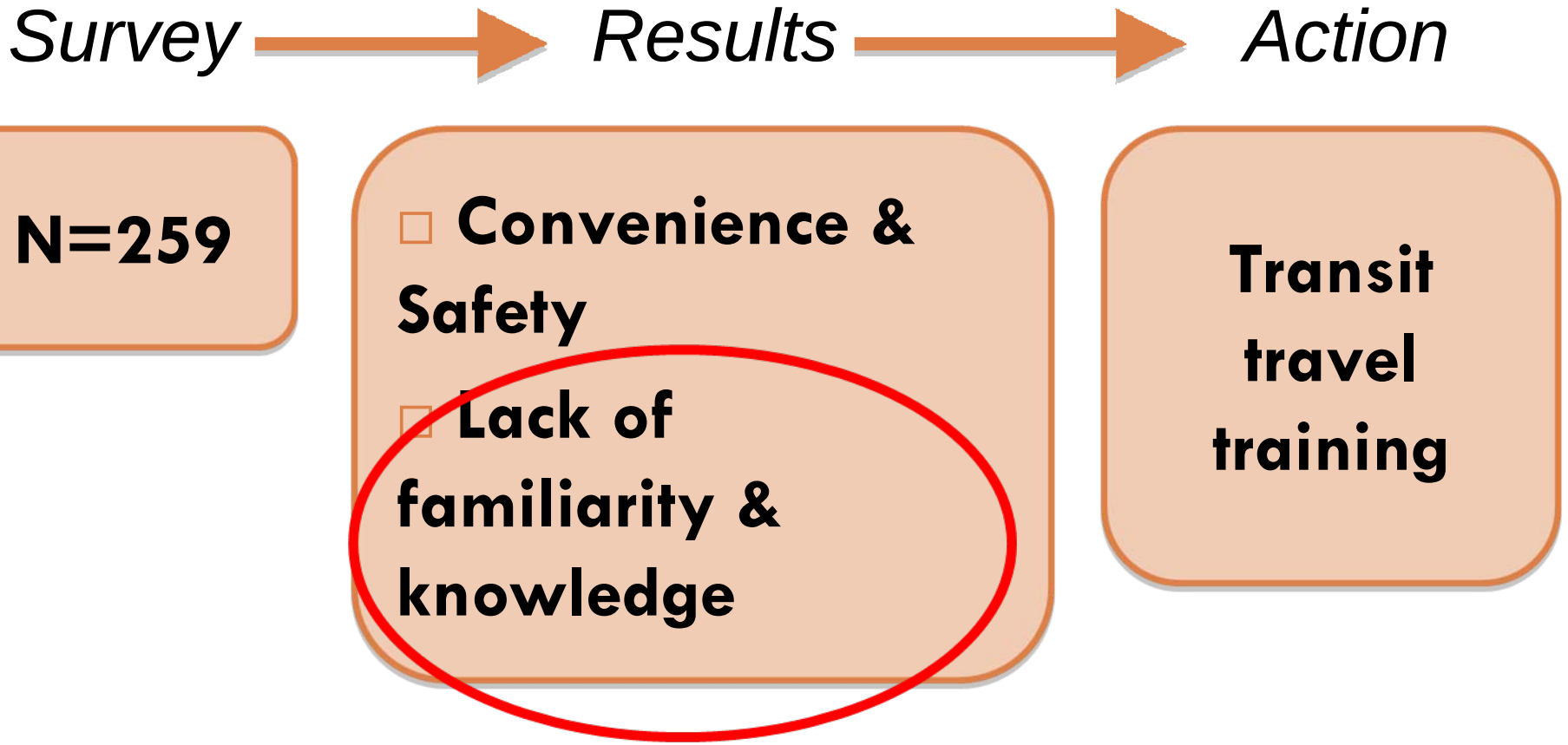


Study overview

2 Phases:

- **Survey older Alameda County residents on their transit habits, attitudes & needs**
- **Implement a social marketing program in the form of a transit travel training program**

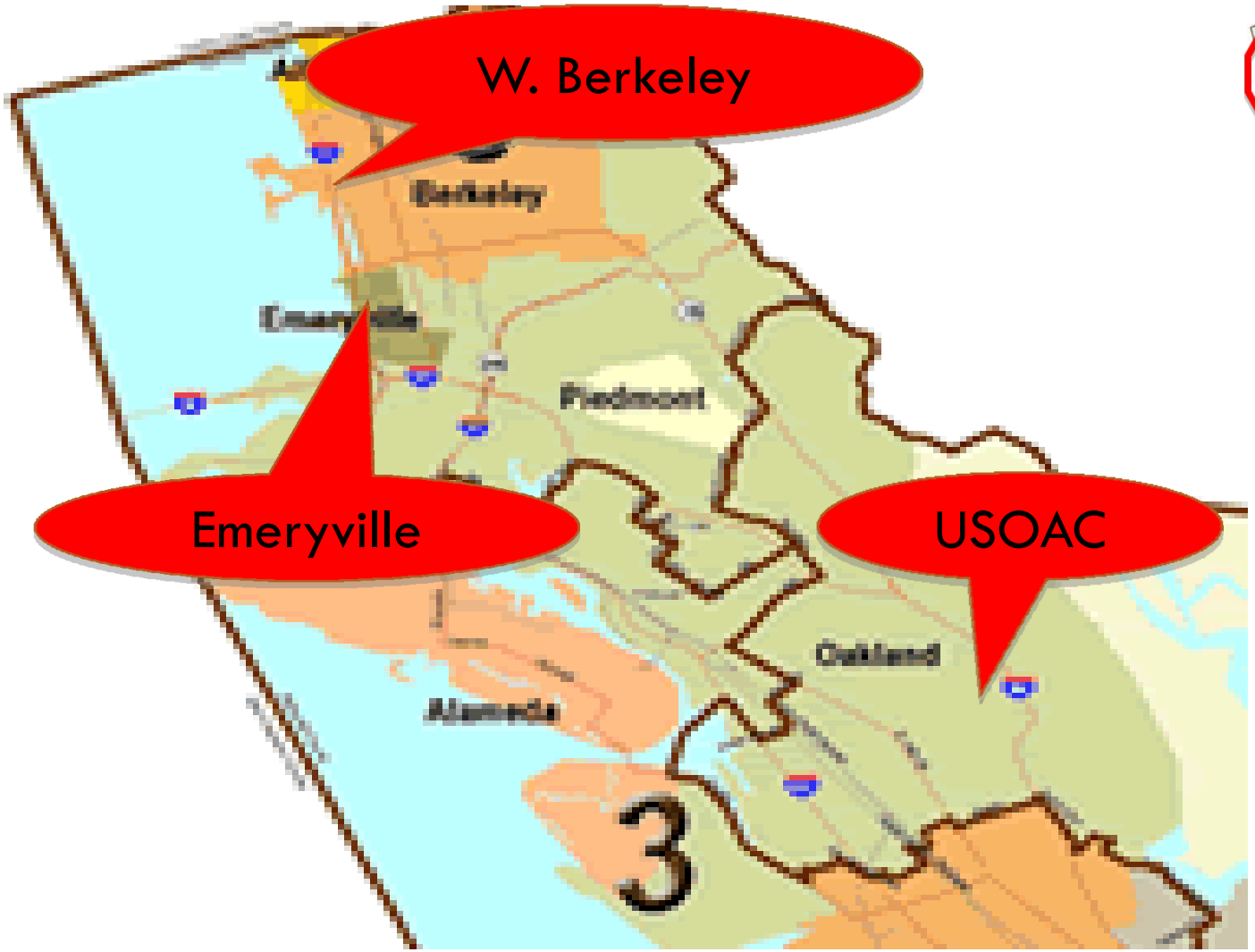
Study overview –Phase I

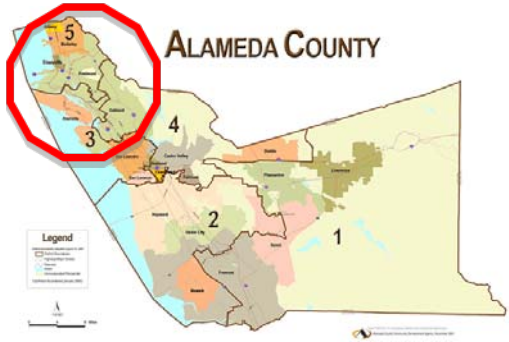


Study overview –Phase II

- Partnership w/United Seniors of Oakland and Alameda County
- Evaluation of training
  - Pre & post survey
- 53 Participants

Travel training sites





Travel training

Elements of the travel training:

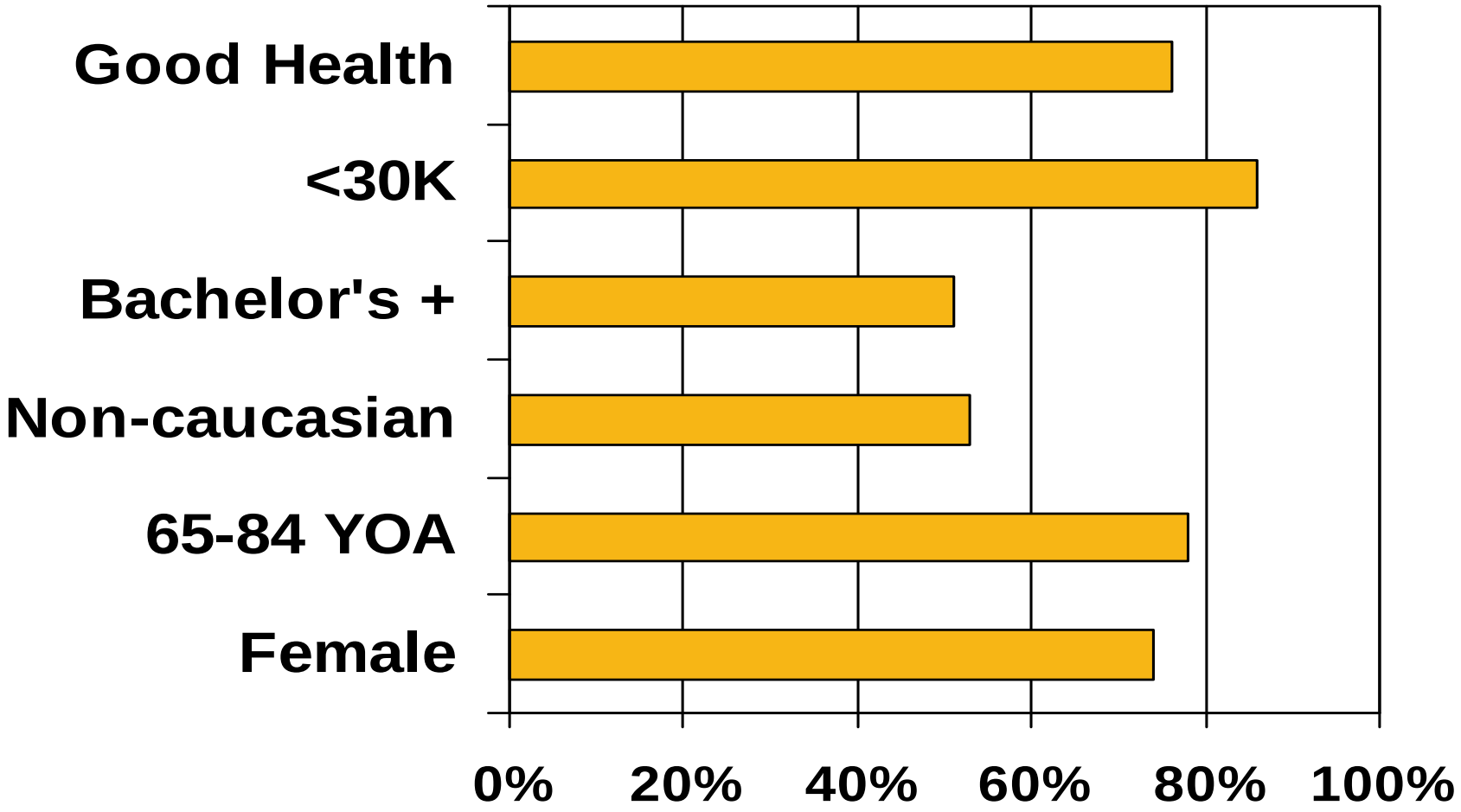
- **4-day workshop + 1 field training**
- **Focused on the two major transit systems in the area**
- **Information = fares, transit stop identification and location, communicating with driver, schedules, seating, etc.**

Evaluation survey

Pre & post survey:

- **Transit use**
- **Reasons for participation**
- **Knowledge of local transit**
- **Concerns about riding transit**

Participant demographics

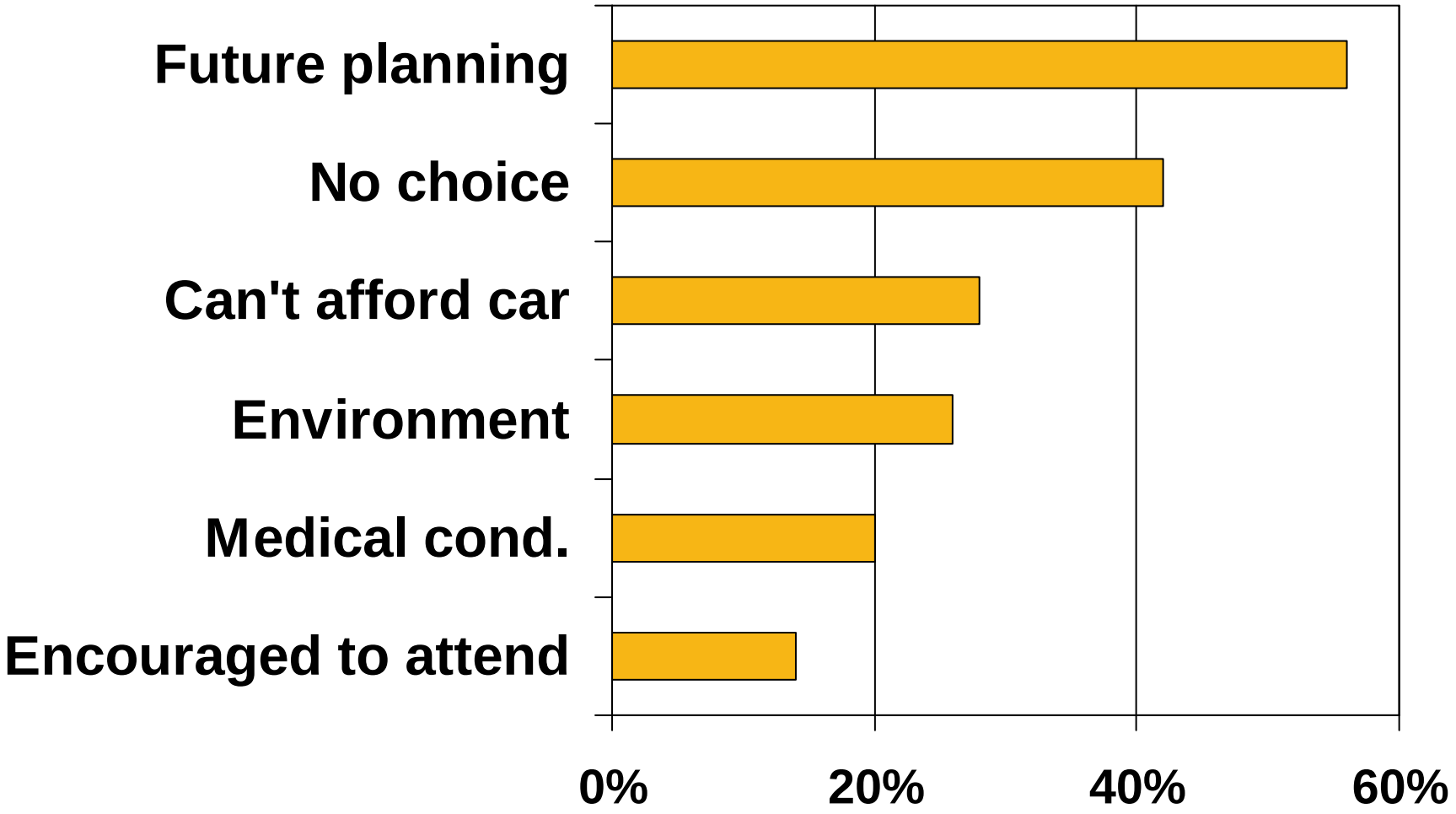


Existing transit use

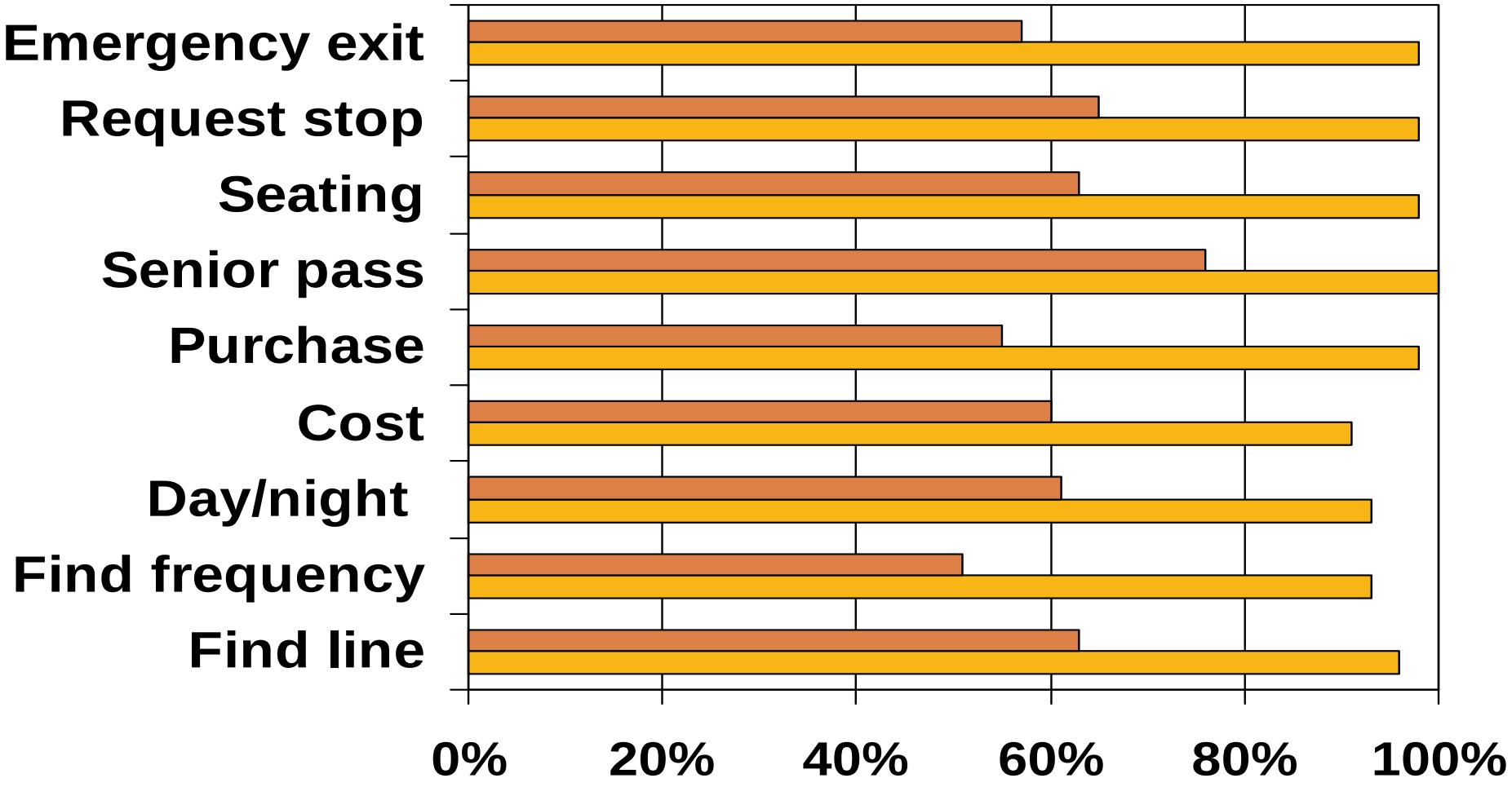
Prior and current use of public transit

- **Nearly half (45%) of participants stated that public transit is their primary source of transportation**
- **The majority (84%) use transit at least sometimes**

Reason for participation

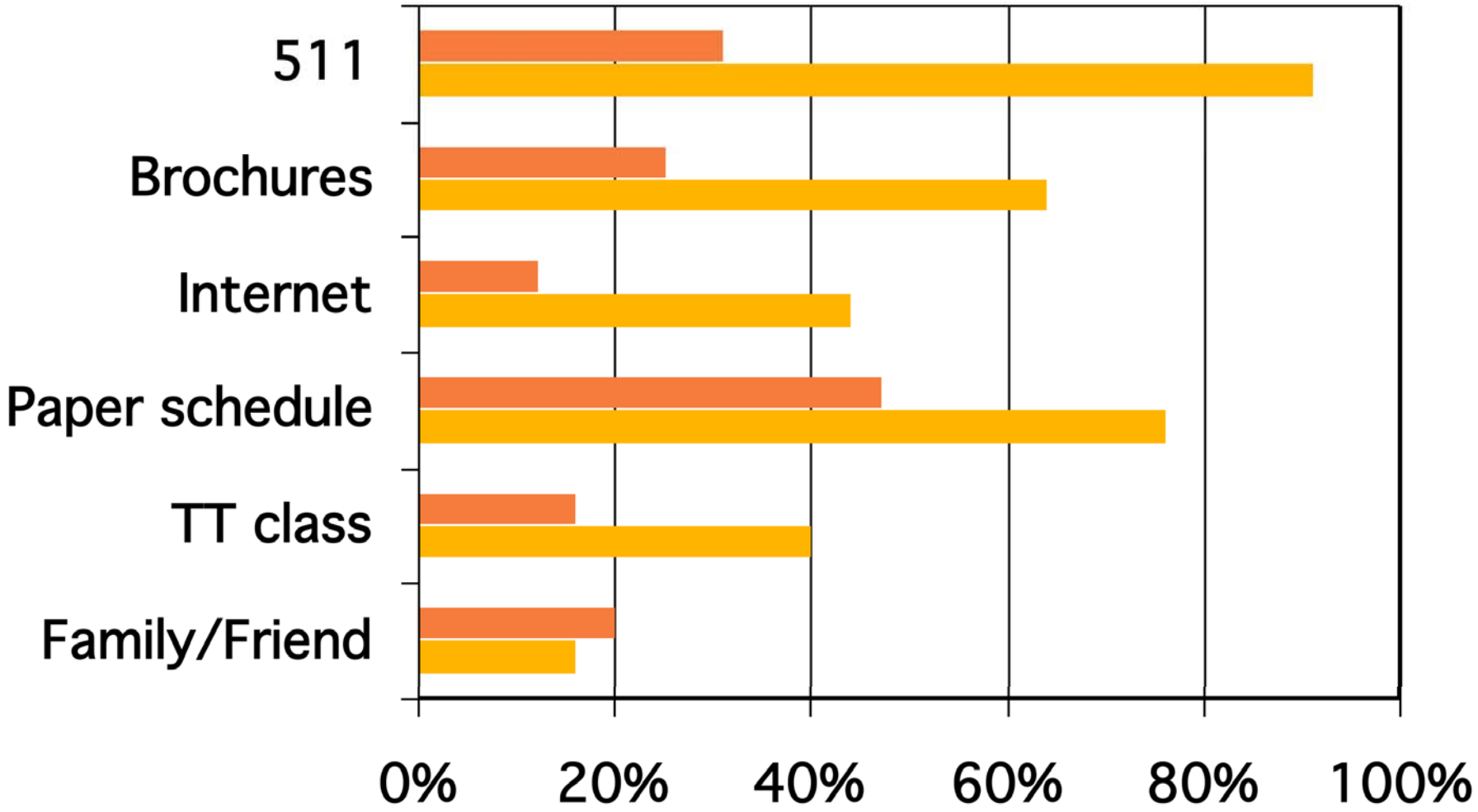


Increase in knowledge



Paired sample *t-test* found that the increase in knowledge was significant at $p = .000$

Accessing transit info.



Concerns with public transit

Top 5 concerns (all):

- **Not enough information regarding transit routes (61%) and schedules (51%)**
- **Transit takes too long (45%)**
- **Fear of falling on the bus (40%)**
- **Crime at transit stops (39%)**

Concerns with public transit

In addition…

Car users:

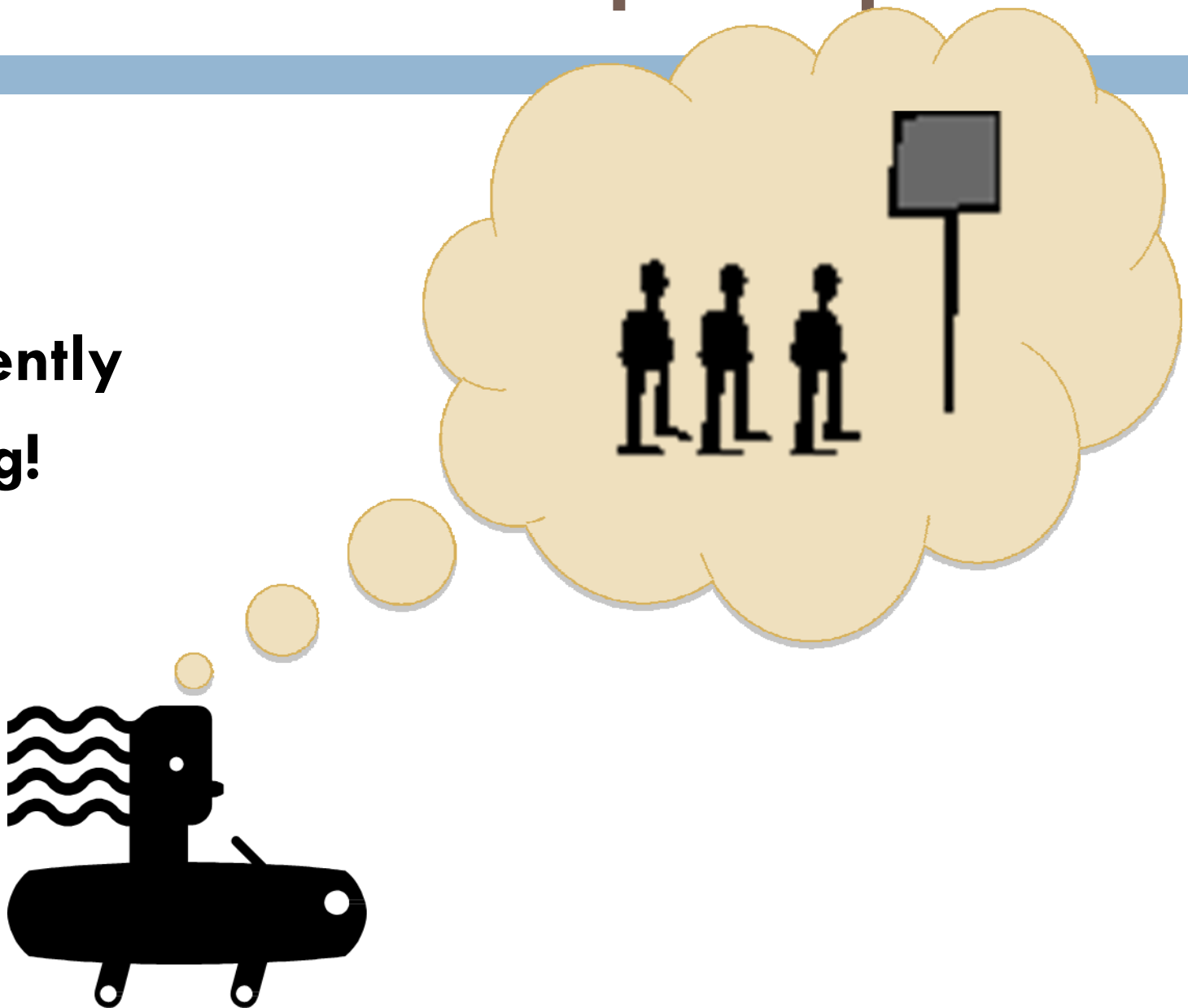
- **Lack information regarding fares (50%)**
- **Public transit is not convenient? (50%)**

Transit users:

- **Obtaining a seat on transit (36%)**

Predictive factors to participation

- Currently driving!



Lessons learned

- Be prepared and organized
- Assess participants for their knowledge level early on and be prepared to address their specific needs and concerns
- Structure a follow-up element into the research that would measure change in travel habits over time

Conclusion

- TT is showing effectiveness
  - Increase in knowledge and familiarity in riding PT
  - Increase in accessing transit info
  - Likely to take transit in the future
- Opportunities for further research
  - Social marketing & support for older adults wanting to plan ahead
  - TT in rural/less urban communities

Thank you!

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TRANSIT TRAVEL TRAINING PROGRAMS

A HOW-TO GUIDE

Traffic Safety Center
Setting New Directions in Traffic Safety

Caltrans

Traffic Safety Center

Setting New Directions in Traffic Safety

Our mission is to reduce traffic fatalities and injuries through multi-disciplinary collaboration in education, research, and outreach and to strengthen the capability of state, county, and local governments, academic institutions, and local community organizations to enhance traffic safety through research, curriculum and material development, outreach, and training for professionals and students.

University of California, Berkeley Traffic Safety Center
2614 Dwight Way #7374, Berkeley, CA 94720-7374
Phone: 510-642-0566
www.tsc.berkeley.edu

February, 2009

TRANSIT TRAVEL TRAINING PROGRAMS

A HOW-TO GUIDE

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Traffic Safety Center
Setting New Directions in Traffic Safety

Caltrans

TABLE OF CONTENTS

INTRODUCTION

The purpose of this handbook is to serve as a "how-to" guide to help you lay the foundation for travel training in your community. It is designed primarily for transit agencies and older adult service providers interested in exploring ways to meet transportation needs in their communities:

- Transit Agencies: Older adults represent a specific population that can be marketed to, and are likely to consider public transit as a transportation option, especially as other forms of transportation become restricted. Transit agencies are great facilitators of travel training programs because they know everything about available public transit! If there is more than one transit provider in the area, transit agencies can work together to provide a more comprehensive travel training program.

- Older Adult Service Providers: Older adult service providers are natural initiators of travel training programs because they have connections to older adults in the community and know the transit needs and concerns of their clientele. Older adult service providers that are likely to provide a travel training program include: older adult advocacy organizations, senior activity centers, residential facilities, churches, day health centers, area agencies on aging, and senior social services.

- Partnerships: The best option is for transit agencies and older adult service providers to partner together to provide a travel training program. This partnership can bring different sets of knowledge and skills together to benefit older adult transit-oriented education. By collaborating, transit agencies and older adult service providers will also learn from one another, improving skills and knowledge for both parties.

This handbook features the following sections to provide background and concrete ideas for starting your travel training program:

- What is Travel Training?
- Developing a Curriculum
- Tips for a Successful Training Program
- Partnerships and Stakeholders
- Funding
- Go Out and Do It!

Mastering the use of various forms of available transportation contributes to the achievement of satisfaction, quality of life, and independence. Learning different ways of traveling in our everyday lives is an ongoing process that starts in childhood.

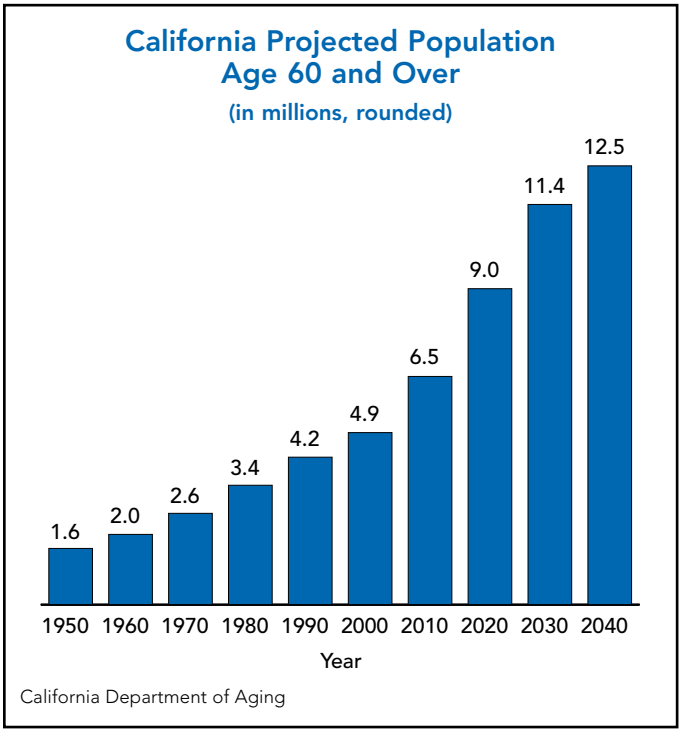
WHAT IS TRAVEL TRAINING?

We begin by learning how to crawl, walk, ride a bike, ride a bus, drive a car, ride a train, fly on airplane, and so on. As our levels of ability change, we become familiar with new modes of transportation that fit our current levels of ability and mobility. We adjust our ways of moving throughout our surroundings and become confident and proficient with the modes of travel that best suit us.

There are various types of public transportation available in most communities, and people can learn how to ride public transit at any point in their lives, either for fun, to increase transportation options, or out of necessity. One way to successfully learn how to use public transportation is through a travel training program. Without travel training, public transportation may seem intimidating to many people and their apprehension can prevent them from using the transit services available to them, resulting in unnecessary limits on their mobility.

Travel training offers an introduction and orientation to fixed route public transportation, including how to read schedules and pay fares, in addition to hands-on orientation. The social context of travel training provides a peer learning environment that reinforces training objectives.

Why is Travel Training a Good Thing?



California Department of Aging

With the population of older adults growing, and the increased societal costs of private transportation, public transit provides an excellent alternative for people of all ages. Travel training programs can help older adults maintain their independence and quality of life as they restrict or cease driving.

Although some older adults may no longer be able to drive, or will choose to drive less, their needs for mobility are not likely to change. It is imperative that there are forms of transportation that allow all people to continue to meet their social and medical needs, and to have access to goods and services. A web of transportation options can be knit together to meet the needs of individuals in any community. For areas with existing public transit services, public transportation will likely be an integral part of the transportation web.

Goals of Travel Training Programs

- Increase participant knowledge of fixed-route public transit systems
- Provide experiential learning that familiarizes participants with riding transit
- Increase confidence in riding public transit alone or with others
- Increase independent mobility so that participants can maintain full, active, and satisfying lives

Using Public Transportation is a Skill That Can Be Learned

Learning how to use public transportation is not always an intuitive process nor does this skill develop on its own. Without a formal introduction to public transit, some may find it intimidating. Learning how to ride public transit through a travel training program can be a safe and effective way for people to become familiar with their local transit systems.

Both Information and Practice are Needed

Older adults need both knowledge about and familiarity with public transit in order to successfully use the services offered. Travel training programs that incorporate both information and practical hands-on guidance can substantially help older adults to learn how to use public transportation. Information that is typically provided in a travel training program includes finding routes, reading schedules, paying fares, boarding, seating, and safety. The hands-on part of travel training involves the instructors and participants going out together and practicing using the different forms of transit available. Learning by experience is an extremely effective way to learn new skills. Learning by acquiring information and practicing riding transit are both ongoing processes and older adults may want to participate in a course more than once, or practice with others until they feel confident to travel alone.

Travel Training Works!

Older adults will find that taking a travel training course to learn the basics of riding public transit is very helpful in fully accessing public transportation.

CASE STUDY: TRAVEL TRAINING IN ALAMEDA COUNTY

A travel training program was conducted in Alameda County, California at senior activity centers. Approximately 50 older adults participated. The majority (56%) of participants said they were taking the travel training class to plan for their futures. Other participants' reasons for taking the travel training course included: health conditions that impaired driving, being unable to afford the cost of a car, encouragement by a family member or friend, or for environmental reasons. Not surprisingly, because we conducted our travel training program at senior activity centers, participants said that they learned about the travel training through outreach at their local center.

IT WORKS!

When we measured specific areas of knowledge regarding information about using transit before and after the training, we found an overwhelming increase in knowledge after participants completed the program.

One of the goals of travel training is to teach participants about ways to access transit information, including from telephone and Internet services to printed schedules. Our post-training evaluation showed that the participants are now more likely to use a variety of sources of information independently, and are less likely to depend on a family member or friend to provide them with answers.

POSITIVE EXPERIENCE FROM TRAVEL TRAINING PARTICIPATION

Travel training participants provided very positive feedback regarding their travel training experience. Positive sentiments included:

"It was fantastic and fun. Thanks to all"

"It's a very worthwhile program and I'd recommend it for all seniors"

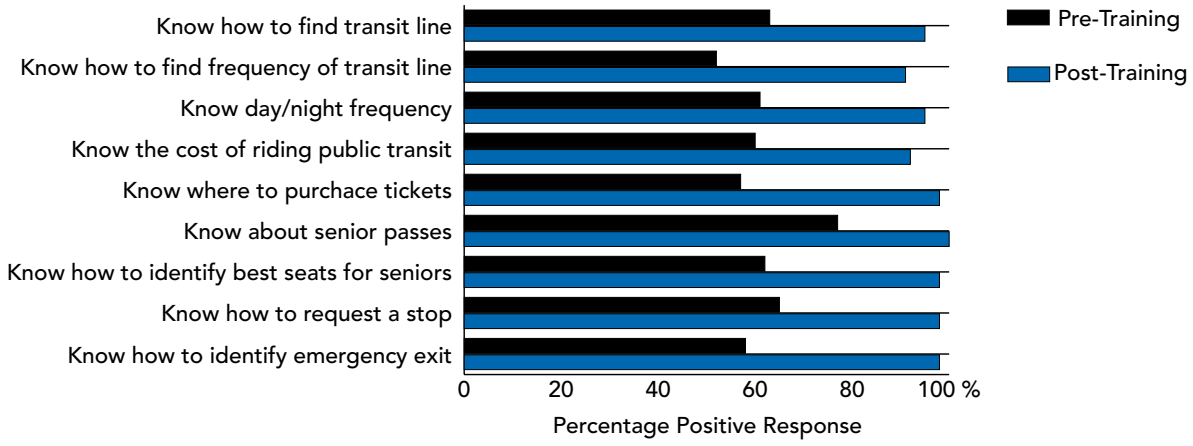
"Excellent program"

"It was very helpful and informative"

"You should do this annually, and at all the senior centers"

"Thank you — I needed this as I made the transition to more mobility, [while also] making it cost effective and with camaraderie"

Knowledge Increase in Participants, Pre- and Post-Travel Training



TIPS FOR A SUCCESSFUL PROGRAM

Be prepared for a diverse group of participants: Older adults who attend your travel training program will likely be a diverse group in terms of racial/ethnic diversity, age, gender, public transit experience, and much more! It is important to realize this at the beginning, and to be aware of the fact that your strategy for engaging one group might be very different when engaging another group.

Speak the language: Before you set up and begin a travel training program, get an idea of the various languages that might be spoken by your participants. Be sure that your materials are language-specific and that your trainers can speak the language of the participants. Hiring someone to do translation can be costly, so plan for this in advance or look for other available options.

Identify your training location and assess the environment: Before the day of your training class, you should assess the location and meeting space. You may want to make adjustments to the seating, temperature, space for visuals, or other aspects. This will help you to be comfortable with the layout of the class on training day.

Promote your training program: Use multiple venues to advertise your class. These can include TV or radio announcements, newspaper advertisements, and flyers at senior activity and housing centers, doctors' offices, health centers, pharmacies, libraries and places of worship. Work with stakeholders to promote the training program.

Arrive early: By arriving early, and setting up the room before the participants appear, you'll not only have time to gather your thoughts but you'll also be relaxed and ready to greet participants.

Outline objectives and expectations: By outlining the objectives and expectations at the beginning, you are laying the foundation for your program. This allows the participants to be fully aware of what they will learn, how the course will be presented, and what you expect of them.

Establish ground rules: Establishing ground rules is an important part of any group activity. It sets an expectation of respect for the meeting time and allows participants to feel safe in the group.

Allow plenty of time for questions: Each participant is attending the class for his or her own individual reasons and is likely to have specific questions. While you may not be able to answer each particular question, make sure that there is enough time for a question and answer period. You may choose to have the participants write down their questions, and then address them all at the end of the training session.

Spend as much time practicing riding public transportation as possible: While learning the basic information about public transportation is important, the most effective way to learn is by doing! Make sure that you leave ample time for your participants to experience local public transit systems as a group. Make an effort to select destinations that older adults care about and are likely to want to travel to in their every day lives.

If possible, provide transit tickets to participants as an incentive to start riding: The reality of your program budget might now allow for incentives. However, providing a small token in the form of a ticket is usually well received by participants. This will not only ensure that your participants can ride with you during the field training segment of the program, but it may also encourage them to ride in the future.

Evaluate your program's success: Evaluation is a very important part of any program. You can evaluate your program in many ways, for example, you can focus on participants' increased knowledge, or the change in their actual public transit usage. The evaluation criteria may be established by the funder, but it is important to take time to think about what you and your organization really want to know about your program's effectiveness.

DEVELOPING THE CURRICULUM

There is no one-size-fits-all curriculum that will work for everyone; it is important to identify the specific needs of your community in order to develop a program that will best serve them.

Don't Reinvent the Wheel!

Use resources that have already been developed. You may be able to customize them to meet your regional needs. Listed below are some resources that may help you develop the ideal travel training program for your community:

General Training Resources

- **National Center on Senior Transportation**
  A helpful website providing links to information on the transportation needs of senior citizens.
  http://seniortransportation.easterseals.com

- **United We Ride**
  A useful link that provides numerous other helpful resources on the topics of travel training, modes of transportation, and other topics related to public transportation.
  http://www.unitedweride.gov/1_148_ENG_HTML.htm

- **Beverly Foundation**
  A very helpful website that caters to transportation needs of and community-based support for older adults. On the website, you can find a link to their "Senior Transportation Library," where you will find numerous excellent resources on everything from transportation, to aging, to information on government agencies.
  http://www.beverlyfoundation.org/

- **Easter Seals Project ACTION (ESPA)**
  ESPA has numerous resources available on their website in their information clearinghouse. The resources include the following topics and can be found at http://projectaction.easterseals.com:

  - **Rights and Responsibilities of Transit Customers with Disabilities**
    This provides essential information for persons with disabilities about how to ride the bus, passenger responsibilities, and paratransit services.
  - **Senior Transportation Options Template**
    This template is designed to provide general information about transportation options for older adults in a typical community.
  - **You Can Ride**
    This resource is presented in pictorial format for persons who have difficulty reading. It provides general information on how to board busses and paratransit vehicles.

- **Getting There: Bridging the Transportation Gap for Older Adults**
  This article identifies methods for addressing transportation issues as they relate to the older adult market, and offers solutions to address these needs.
  http://www.apta.com/research/info/briefings/documents/smith_drost.pdf

Specific Training Resources

- **Ride Wise**
  RideWise is an organization providing travel training for senior citizens and people with disabilities. This website lists services they offer and success stories, in addition to links providing useful resources.
  http://trimet.org/ridewise/index.htm

- **Easy Rider**
  The Easy Rider Program is a one-on-one travel training program for older adults, and this helpful website offers several personal success stories as reported by participants of the program.
  http://www.specialtransit.org/easy_rider.htm

- **Effective Fixed Route Travel Training: A Collaborative Approach**
  A project report detailing the endeavors, curriculum, and partnerships involved in Project ACTION (An Easter Seals project striving to train disabled citizens in using paratransit).
  http://projectaction.easterseals.com/site/DocServer/95FRTT.pdf?docID=18943

- **Alameda County Older Adult Group Travel Training Manual**
  Developed by Nelson/Nygaard Consulting Associates for Alameda County Transit Improvement Authority, this is a detailed travel training curriculum outlining basic considerations when conducting a travel training program, organization and recruitment, and training events.
  http://www.acta2002.com/

Evaluate Transit Services in Your Community

If you use an existing curriculum, it is best to tailor it to your own community's needs and services.

First, you will need to assess the availability of public transportation in your region. This will help guide your curriculum development.

SOME THINGS TO CONSIDER:

- Is public transit widely used in your region?
- What are the major public transit agencies in your community?
- Does public transit have a wide catchment area in your community?
- What are the various types of public transit available in your community?
- What is the history of public transit in your region?
- Are there seasonal/weather challenges that affect public transit use?

Determine the Needs of the Older Adult Population in Your Community

Conduct a small survey of the older adult population in your area to determine their needs for transportation and their level of acquaintance with the public transportation system. This is accomplished preferably by speaking with older adults directly, but can also be achieved by speaking with local providers. Assess the level of knowledge and any fears or apprehensions this population may have about riding public transportation. This assessment will guide the development of your program.

SOME POSSIBLE QUESTIONS TO ASK:

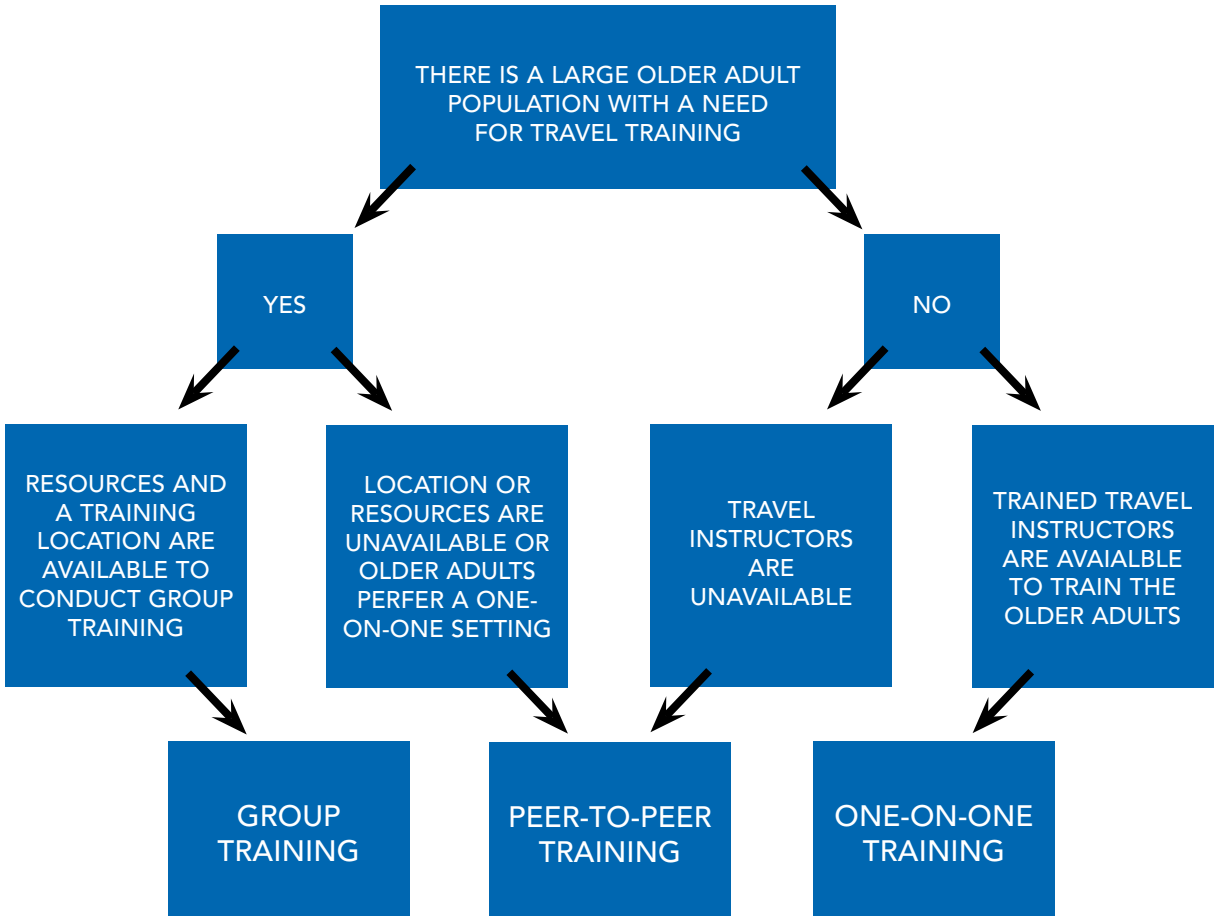
- How often do you need transportation?
- Which types of transportation do you generally use (i.e., private car, ride with a driving family member, public transportation or paratransit)?
- Do you already take public transportation? If not, would you like to learn?
- Which types of public transportation are available in your area?
- Do you have any fears/dislikes about public transportation?
- What would you like to learn about public transit?

Establish a Training Format

Having assessed the needs of the senior citizen population and identified any public transportation available to them, you are ready to select a training model based on the need of the older adults in your area. There are three popular models of travel training. Each can be effective, but the needs of those in your particular community will dictate which type is likely to be the most successful.

- **One-on-one training:** Travel instructors meet individually with potential riders to discuss their transportation needs, review specific public transit concerns and needs, plan potential trips, and practice riding public transportation with a trained guide.
- **Peer-to-peer training:** A current user of public transit works with a potential rider to explain how the particular transportation method works, accompanies the newcomer in riding public transit, and assists in navigating schedules and other information.
- **Group training:** Group training usually involves two or more participants and one or more travel instructors. Participants may be taught using curriculum based materials, group exercises and activities, and group outings on public transit.

The following flow chart will help you to determine which training model may fit your needs most successfully:



Information Dissemination Style

Remember that training is more effective if it includes a variety of learning styles. There are several possible styles of transportation training:

- **Activity-Based:** What better way to learn how to use public transportation than actually taking a trip? Ride the bus! Take the metro! Hands-on, activity-based training is effective because it familiarizes participants with the actual process of using public transportation.
- **Lecture-Based:** Lecture based training can also be very effective, particularly if you make use of interactive techniques. Include group discussions, role-playing and worksheets.
- **Combination of Activity- & Lecture-Based Methods:** Often the best way to create an engaging learning environment is to combine these two methods.
- **Printed "Take Away" Materials:** Flyers, handbooks and brochures can be very useful to reinforce the skills learned at the training session and to provide information class participants can refer to in the future if they have questions.

Basic Elements to Include in the Training Program

After choosing the training method or methods, you should formulate a list of basic elements that you hope participants will be able to master after the training session.

Regardless of the order of your presented materials, items that should be included in every travel training program include:

- Areas/districts/neighborhoods served by the various transit agencies
- Local and regional transit agencies that serve your community
- For each transit agency:
- Where and how to purchase tickets (there may be multiple options for various transit agencies)
- Ticket costs (regular and senior tickets/passes)
- Information about transfers (how much they cost, where they can take riders, and time limits on use)
- Information regarding senior and disabled passes (provide applications if possible)
- Transit stop identification
- How to read maps
- How to read schedules and plan a trip
- Vehicle identification (what the buses/trains/etc. look like)
- How to read the bus/metro/train number for proper route identification
- How to board the vehicle
- Where the best seats for older and disabled adults are located
- How to request a stop
- How to disembark from the vehicle
- How to communicate with the transit operator and/or other transit personnel
- Where to find more information regarding transit
- Knowledge of sample routes from and to:
- Doctor's offices, health centers, pharmacies
- Libraries
- Retirement communities
- Churches
- Activity and community centers

Addressing Safety Issues

As with any training program, issues of safety exist and need to be addressed. Many older adults express concern that taking public transportation may compromise their physical safety. These concerns should be acknowledged and addressed through specific strategies in the training curriculum in order for participants to feel confident and safe while using public transportation. Safety issues that may arise during the travel training may include:

PHYSICAL HAZARDS:

- practicing proper caution when boarding/descending
- riding in a safe manner in order to prevent falls while the vehicle is in motion
- taking extra precautions if the participant is disabled in any way
- pedestrian safety in approaching transit stops

ISSUES OF CRIME

- exercising vigilance at the station/on board
- considering traveling with a companion at night
- waiting at well-lit and populated transit stops

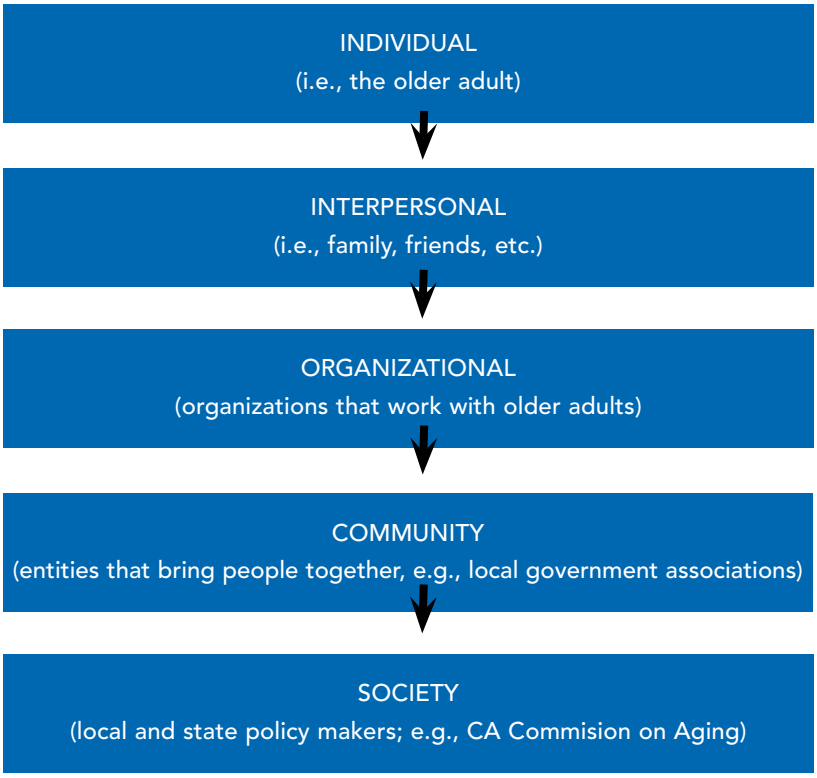
PARTNERSHIPS AND STAKEHOLDERS

Partnerships

The success of any social program often depends on connections between numerous groups. There are many benefits that result from the formation of partnerships, including: resource and information sharing, diverse insights and perspectives, increased legitimacy, shared responsibility, and expanding the target market. To get a fledgling social program off the ground, it is often crucial to form connections with more experienced groups to form a solid foundation upon which to grow.

In the case of older adult travel training, it is important to realize the advantages of creating partnerships between transit agencies and senior social service groups. The transit agency is more knowledgeable about the specific modes of transportation and services available to the general public, but may not be aware of how to best accommodate the needs of older adults. However, senior social service groups, which cater specifically to the older adult population, are familiar with the needs of their clientele but may be unaware of all of the public transportation options available to them. This is where partnerships come in.

Stakeholders



A stakeholder is a person or organization that takes an interest in, and participates in your project, having a stake in its success. Their participation enables stakeholders to influence the program, as well as the services or products it offers. Stakeholders can be found on various levels, as illustrated on the left.

Stakeholders from various background can provide different types of input and expertise that can benefit the project. For example, a stakeholder who is a family member or friend of an older adult can provide input regarding the needs or interests of the older adult community. Similarly, a stakeholder in the form of a local legislator can offer legal advice and insight.

What Are the Benefits of Having Stakeholders?

There are many benefits to including stakeholders in your program:

- Consulting a stakeholder during the early stages of development of your program will establish not only the stakeholder's interest, but also is likely to improve the success of your program.

- Additional resources and aid will be easier to acquire through the involvement of stakeholders.
- Stakeholders representing various sectors of the community will be invaluable in relating the expectations of—and reactions to—the program that others may have.
- Stakeholders will be helpful in anticipating and addressing issues of politics that may come up during program development.

Safety Stakeholders

Safety issues are likely to arise in your program, and it is useful to address these promptly and correctly with the help of stakeholders with expertise in this area. You may consider forming connections with potential stakeholders in professions such as:

- Public health
- Medicine
- Law enforcement

Ways to Approach Potential Stakeholders

After learning about the various types of stakeholders and what they may bring to your project, it is time to start thinking about which stakeholders you might want to include and how to engage and communicate with them.

The first step is to meet with your team members to discuss any potential stakeholders in your community that you feel would be most beneficial to your program. It is helpful to brainstorm to create a list of people or organizations that are affected by your project, have influence over it, or would likely be interested in its success.

After creating a list of prospective stakeholders, you need to begin thinking about ways to approach them, and engage their interest. Here are some questions to help get you started:

- What type of interest does the stakeholder have in your project? (i.e., personal, financial, or political)
- What information is expected of you? How will you present this information to the potential stakeholder?
- What are the opinions and motivations for the stakeholders in your training? Are they well founded?
- Who or what influences these opinions? If it is other organizations or individuals, these might also be considered as potential stakeholders.
- Do you and the potential stakeholder have different motivations and/or preferred outcomes? If so, how might you work together?

Consider answering these questions through direct communication with the stakeholders. Not only will you get the most accurate feedback, but it will also help to establish a solid relationship with your stakeholders early on, and they will be happy to hear that their views are important to you.

FUNDING

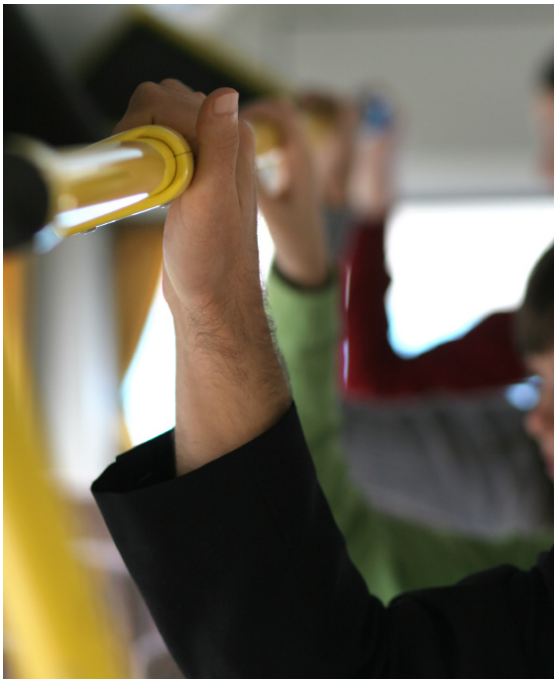
When starting a new project, funding is crucial in getting your program started and running smoothly, as well as ensuring sustainability. It is important in establishing successful promotion, core and staff support, and acquisition of any supplies the program might require. Searching for funding might seem daunting, but with the right mindset, funding may easily be found on the local, state, and even national level.

Agencies That May Be Interested in Funding Travel Training

- Local foundations and businesses (whether they pertain to older adults/transportation or not) that may have an interest in contributing to the health of the older adult community
- Congestion management agencies
- Local transit agencies
- Regional transportation agencies
- Local departments of transportation
- Caltrans (http://www.dot.ca.gov/hq/LocalPrograms/index.html; http://www.dot.ca.gov/hq/MassTrans/Coord-Plan-Res.html)
- Federal Transit Administration (http://www.fta.dot.gov/grants_financing.html)
- United We Ride (www.unitedweride.gov)

GO OUT AND DO IT!

Now that you have read through some of the key elements to designing and developing your travel training program, you are ready to implement the program. Before you go out into the community, review this checklist to make sure that you have everything in place for a successful travel training program!



- **Curriculum:** Have you established an effective curriculum model that will best suit the needs of the older adult population in your community? How have you finalized this curriculum (i.e., researched the needs of your population, prepared a presentation, created a workbook,)?
- **Trainers:** Are your trainers qualified and familiar with the curriculum you have finalized? Are they familiar with their role and responsibilities?
- **Training Location:** Do you have a confirmed accessible and permanent training location? When you arrive, make this location as comfortable as possible to best facilitate an effective learning environment (i.e., proper lighting, temperature control and comfortable and accessible seating).
- **Participants:** Have you promoted the training program to all members of the older adult community that may be interested in or have a need for transportation training? How successful was your outreach process? Were the participants well-informed/reminded of all training dates, information, locations?
- **Evaluation:** Do you have an evaluation plan established in order to assess the success of your program, thereby establishing ideas for future programs?
- **Follow Up:** How will you follow up with your participants after the training to gage their satisfaction with the program (i.e., self-addressed stamped postcards/telephone or online survey)? To establish an effective follow up method, assess the technological abilities and resources of your participants (for example an online survey may only be appropriate for some older adults).

Good luck and have fun!

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